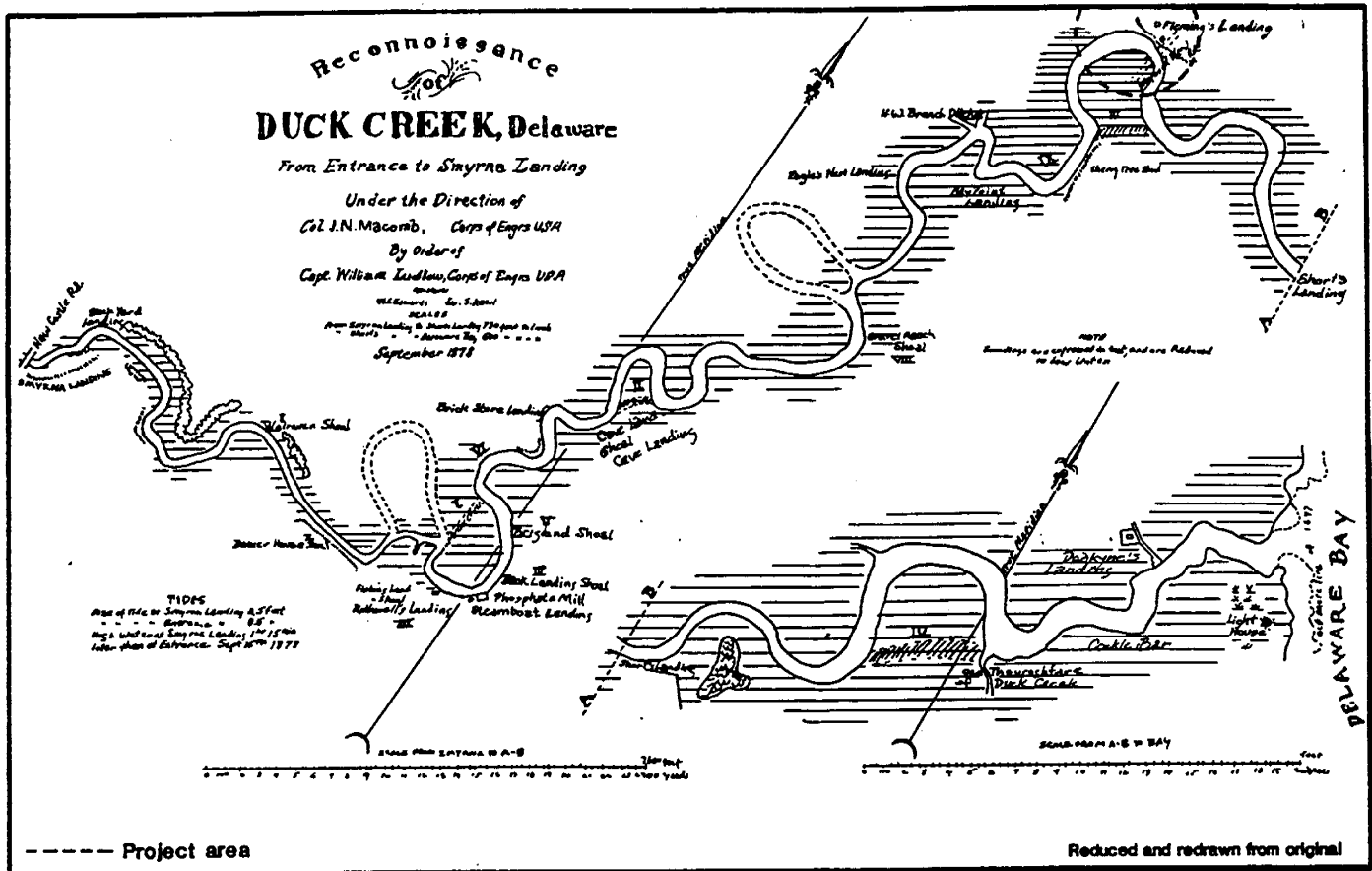


Archaeological Investigations of the Flemings Landing Bridge Replacement, New Castle and Kent Counties, Delaware



by

Ellis C. Coleman, Angela Hoseth, Jay F. Custer and Laura Jagers

UNIVERSITY OF DELAWARE
Department of Anthropology
Center for Archaeological Research

Delaware Department of Transportation Archaeological Series No. 64



Delaware Department
of Transportation

John T. Davis
DIRECTOR
Division of Highways

1988

U.S. Department
of Transportation
Federal Highway
Administration



reprint

ARCHAEOLOGICAL INVESTIGATIONS OF THE
FLEMINGS LANDING BRIDGE REPLACEMENT,
NEW CASTLE AND KENT COUNTIES, DELAWARE

DELDOT PROJECT 78-022-01

DELDOT ARCHAEOLOGY SERIES NO. 64

FHWA FEDERAL AID PROJECT RS 1109-2

By

Ellis C. Coleman, Angela Hoseth, Jay F. Custer
and Laura Jagers

UNIVERSITY OF DELAWARE
Department of Anthropology
Center for Archaeological Research

Submitted To

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

and

DELAWARE DEPARTMENT OF STATE
Division of Historical and Cultural Affairs
Bureau of Archaeology and Historic Preservation

Prepared For

DELAWARE DEPARTMENT OF TRANSPORTATION
Division of Highways
Location and Environmental Studies Office

John T. Davis
Director
Division of Highways

ABSTRACT

Phase I and II archaeological investigations of the Flemings Landing bridge replacement project area resulted in the identification of one prehistoric site, 7NC-J-165, and one historic site, an early 20th century wharf/warehouse. The prehistoric site is tentatively identified as a micro-band base camp occupied during the Woodland I and Woodland II periods. Yard scatter from the Fleming House (N-153), a National Register site adjacent to the project area, was found intermixed with 7NC-J-165 within the proposed right-of-way. The site has been badly disturbed and is not eligible for the National Register of Historic Places. The historic Smith and Burkley wharf/warehouse was also found to be ineligible for the National Register of Historic Places due to the site's badly disturbed context and lack of historical association. No further work is recommended on either of these two sites.

Surrounding the project area, in addition to the mid-19th century Fleming House, outbuildings, and wharf, two early 20th century frame tenant houses and at least four historic archaeological sites were located. These include the site of an early 20th century bridgekeeper's house, a mid-19th century residence and associated early 20th century store, and an early 20th century tomato cannery. None of these sites will be impacted by the proposed bridge replacement project.

ACKNOWLEDGEMENTS

Appreciation for their support, administration, research, and services is extended to all of the following individuals:

From the Division of Highways: Raymond D. Richter, Jr., Assistant Director, Preconstruction; Joseph T. Wutka, Jr., Location Studies and Environmental Engineer; Kevin W. Cunningham, DelDOT Archaeologist; Therese M. Fulmer, Environmental Planner; Carol L. Kates, Secretary; Joanna Likens, Project Scheduling and Support.

From the Federal Highway Administration: Charles J. Nemmers, Division Administrator; and Robert Wheeler, Field Operations Engineer.

From the Bureau of Archaeology and Historic Preservation: Daniel R. Griffith, Bureau Chief; Faye L. Stocum, Archaeologist; and Alice H. Guerrant, Archaeologist.

From the University of Delaware: Juan Villamarin, Chairman, Department of Anthropology; Jim Pizzuto, Department of Geology; Carolyn Fierro, Administrative Assistant; Joanne Edwards, Secretary, Department of Anthropology.

From Division of Graphics and Printing: Ray Moore, Shop Supervisor; John Bordley, Pressman; Bob Farley, Pressman; Jeff Faulkner, Pressman; Dorothy Hutchins, Machine Person; Joan Pillsbury, Bindary Clerk; Grace Steele, Graphics Specialist, and William Yerkes, Cameraman and Pressman.

Appreciation for their help, information, interest and support is extended to all of the residents of Flemings Landing. Special thanks and recognition is offered to the following residents who were particularly helpful in providing information on historical background and cultural resources related to the project. These include: Mr. and Mrs. David C. Rowland, Larry Tosh, and William B. Gardner.

TABLE OF CONTENTS

	Page
Abstract.....	i
Acknowledgements.....	ii
Table of Contents.....	iii
List of Figures.....	iv
List of Tables.....	v
List of Plates.....	v
Introduction.....	1
Environmental Setting.....	1
Regional Prehistory.....	9
Regional History.....	14
Research Methods.....	38
Results of Phase I and II Investigations.....	40
Segment 1: South Side of Smyrna River.....	41
Segment 2: North Side of Smyrna River.....	41
Conclusions.....	74
References Cited.....	76
Personnel.....	81
Appendices.....	83
Appendix I: Artifact Inventory.....	83
Appendix II: Notes on Site Numbers.....	92
Appendix III: Glossary.....	94

LIST OF FIGURES

	Page
Figure 1: Flemings Landing Project-Regional Location.....	2
Figure 2: Flemings Landing Project Area and Project Segments.....	5
Figure 3: Subsurface Profile Information for Bridge #452.	8
Figure 4: Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds, from Rea and Price "Map of New Castle County, Delaware" (1849)	27
Figure 5: Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds, from D.G. Beers' "Atlas of the State of Delaware" (1868).....	28
Figure 6: Detail of Flemings Landing, Blackbird and Duck Creek Hundreds, from G.W. Baist's "Atlas of New Castle County" (1893).....	29
Figure 7: Site Boundaries and Test Unit Locations - 7NC-J-165.....	52
Figure 8: Reconnaissance of Duck Creek, Delaware from Entrance to Smyrna Landing - September, 1878..	57
Figure 9: Test Excavations at the Smith and Burkley Weigh Station.....	64
Figure 10: Flemings Landing, Test Unit 6, North Wall Profile.....	67
Figure 11: Flemings Landing, Test Unit 1, North Wall Profile.....	67
Figure 12: Historic Artifact Distribution - 7NC-J-165.....	69
Figure 13: Prehistoric Artifact Distribution - 7NC-J-165..	71

LIST OF TABLES

	Page
Table 1: Summary of Deed Transactions for the Flemings Landing Site, 1767-1987.....	43
Table 2: Composite Summary Catalogue - 7NC-J-165.....	70

LIST OF PLATES

Plate 1: Aerial View of the Flemings Landing Project Area.....	3
Plate 2: Flemings Landing Bridge, Looking North.....	4
Plate 3: Nellie E. Johnson House.....	48
Plate 4: Almus A. Akers House.....	49
Plate 5: Fleming House (N-153).....	51
Plate 6: Smith and Burkley Wharf, Looking Northwest.....	60
Plate 7: Spence's Bazaar (former Smith, Burkley, and Billingslea Tomato Cannery).....	62
Plate 8: Flemings Landing Site, Looking South.....	65
Plate 9: Prehistoric Artifacts from Phase I/II Investigation at the Flemings Landing Site (7NC-J-165).....	72

INTRODUCTION

The purpose of this report is to describe a Phase I and II archaeological survey of the right-of-way for the proposed Flemings Landing Bridge replacement in Blackbird Hundred, southern New Castle County, and Duck Creek Hundred, northern Kent County, Delaware (Figure 1, Plates 1 and 2). The survey was undertaken by the University of Delaware Center for Archaeological Research (UDCAR) for the Delaware Department of Transportation (DelDOT) and the Federal Highway Administration (FHWA) under Section 106 of the National Historic Preservation Act to evaluate the effects of the proposed bridge relocation and reconstruction on significant, or potentially significant, cultural resources as defined by the National Register of Historic Places (36CFR60) and was performed in two phases. A preliminary Phase I survey of the project area was completed in 1986 by Kevin Cunningham and Laura Jagers of DelDOT and consisted of a surface reconnaissance of the project area and archival research. Additional Phase I/II research was conducted between April and July of 1987 and consisted of further surface reconnaissance and two controlled surface collections, the excavation of 15 1m x 1m test units, and further archival research. During these studies, the entire proposed right-of-way (ROW) is considered subject to potential impact (Figure 2).

ENVIRONMENTAL SETTING

The Flemings Landings project area is located on the boundary between New Castle and Kent counties (Figure 1). The Smyrna River, which forms the political boundary between New

FIGURE 1
Flemings Landing Project-Regional Location

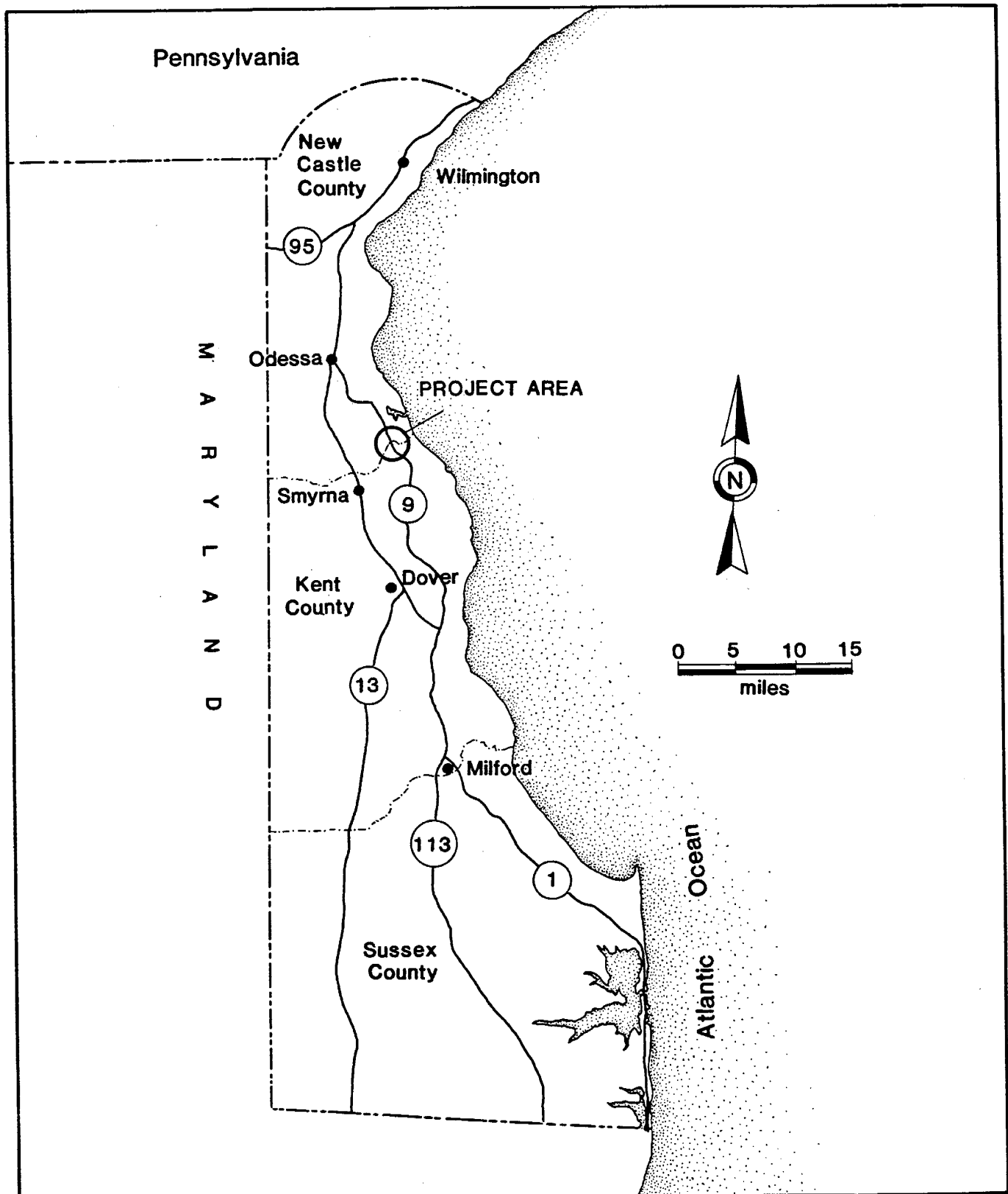


PLATE 1

Aerial View of the Flemings Landing Project Area

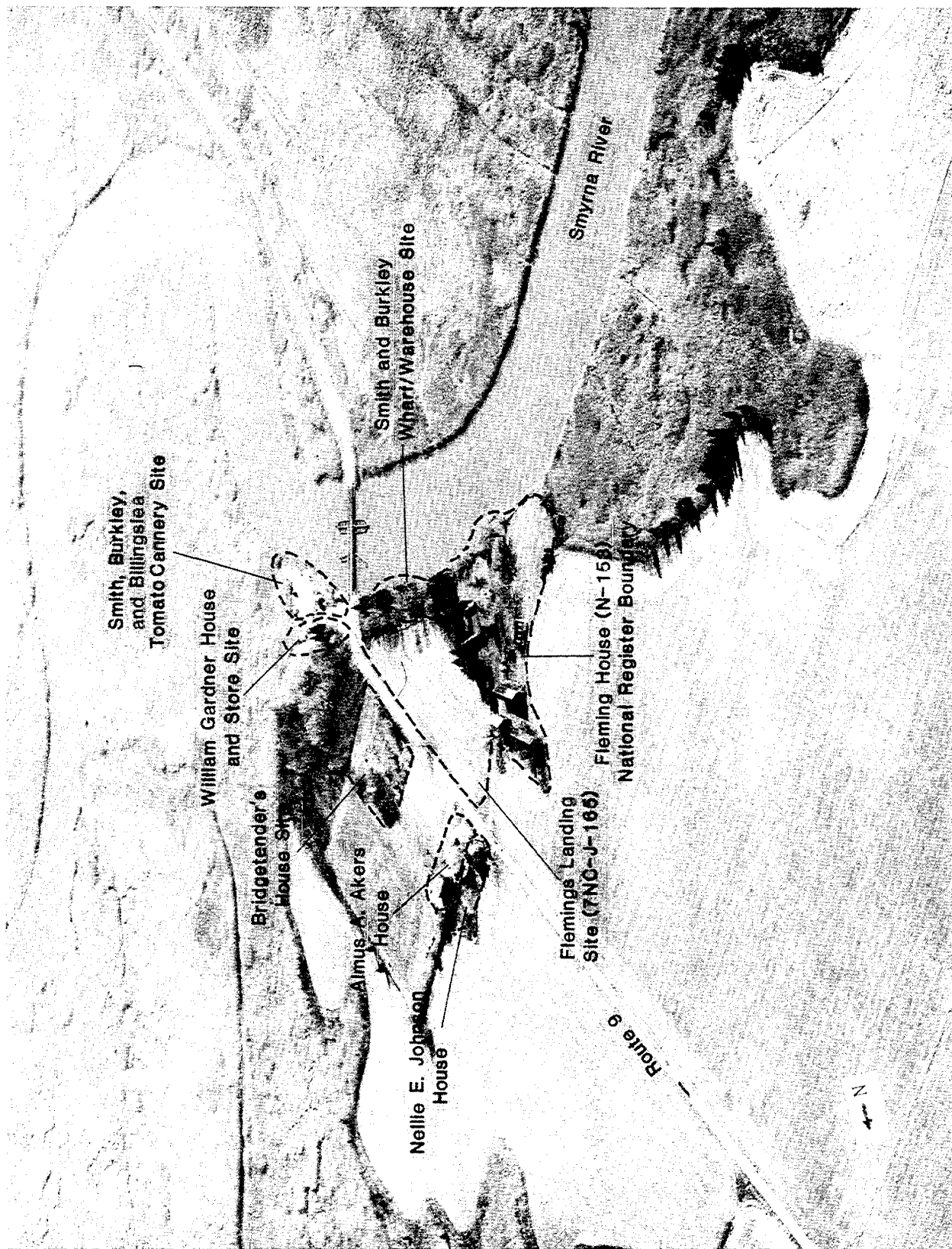


PLATE 2
Flemings Landing Bridge, Looking North

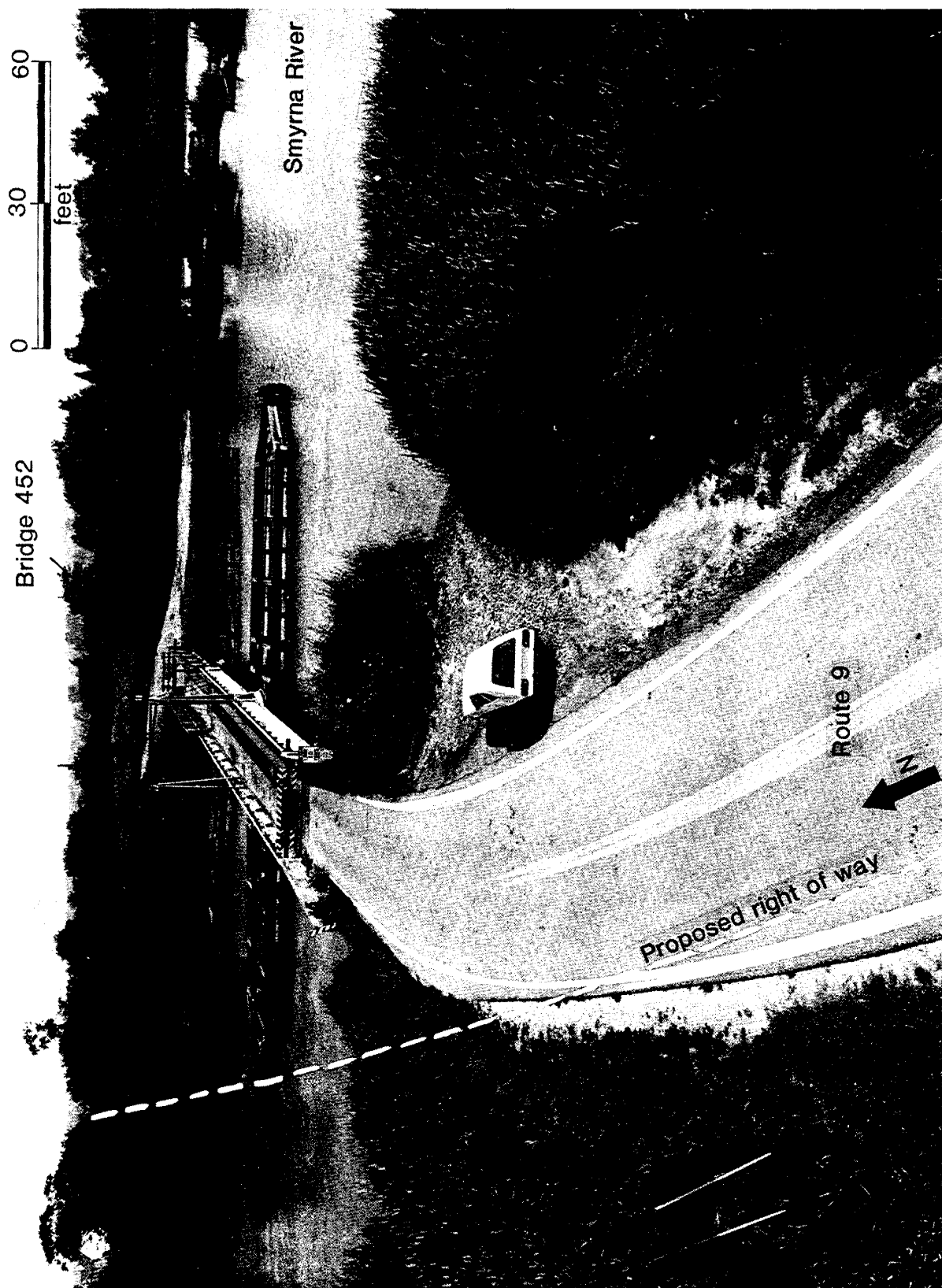
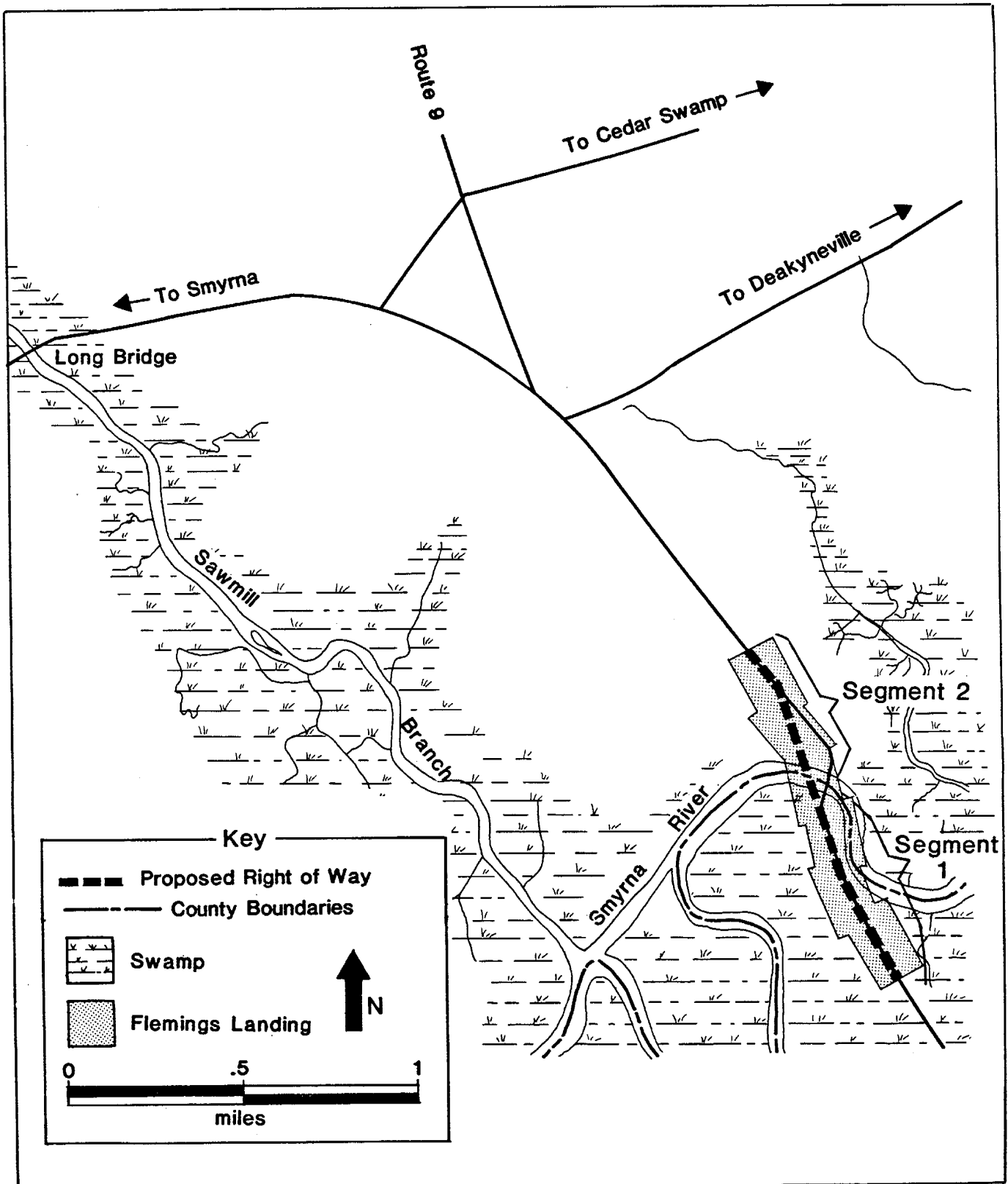


FIGURE 2

Flemings Landing Project Area and Project Segments



Castle and Kent counties, flows through the center of the project area and marks the boundary between the High and Low Coastal Plain physiographic zones. Thus, the project area is in a transitional area between these two physiographic zones of Delaware. The summary of the local environmental setting presented below is abstracted from the work of Custer (1984:23-25) and Custer and DeSantis (1986).

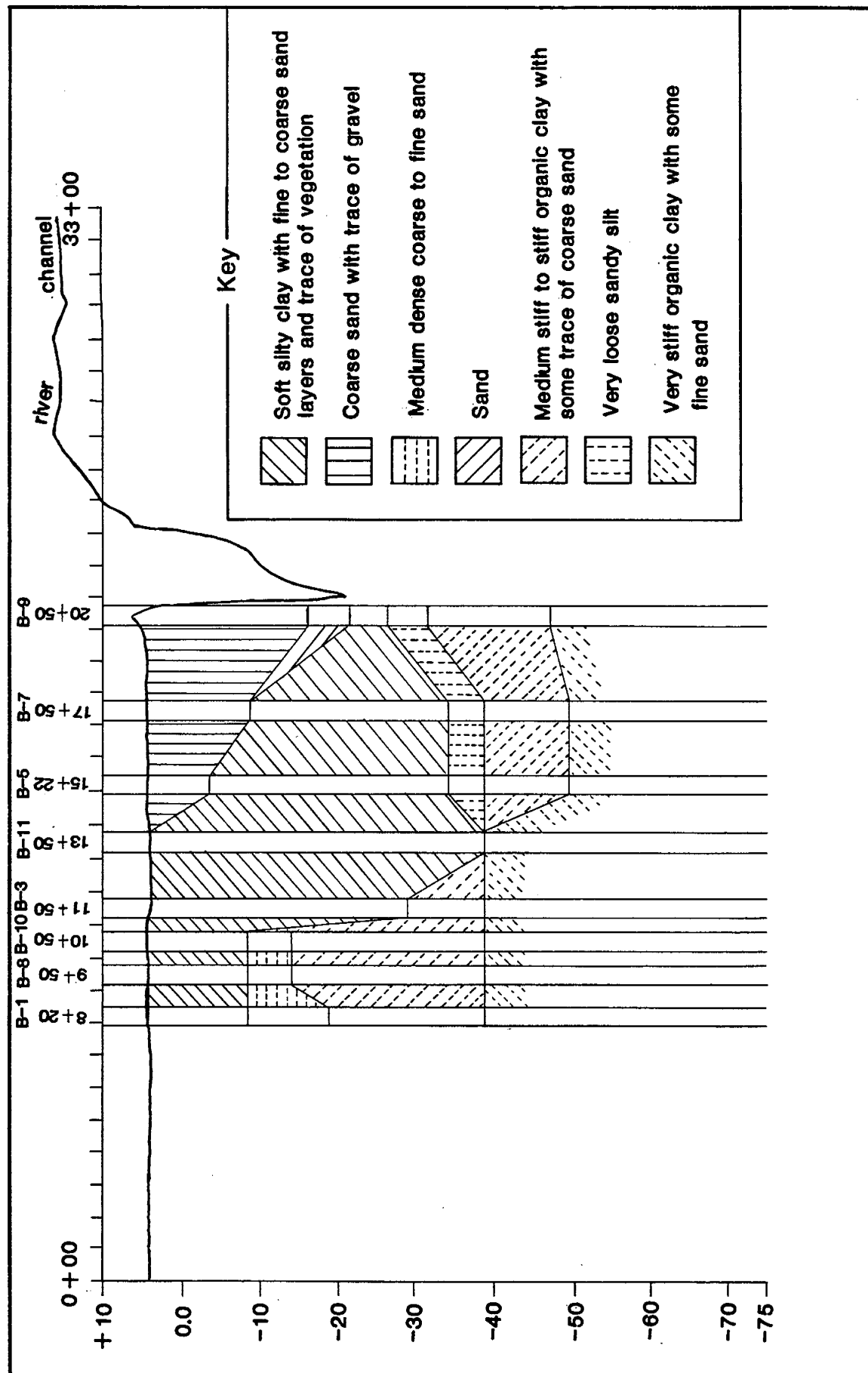
The Upper/Lower Coastal Plain transition zone of Delaware represents an east-west trending zone through the north-central portion of the Delmarva Peninsula and is characterized by geological and environmental features common to both the Upper and Lower Coastal Plain (Spoljaric 1967:3). Located between the Fall Line and the Smyrna River, the High Coastal Plain represents the southeastern extension of the very coarse glacial deposits of the Columbia sediments (Jordan 1964:40). In many areas these coarse deposits resisted erosion, creating a rolling topography with up to 16 meters (50 feet) of elevation difference between the headlands bordering the larger streams and the adjacent floodplain marshes. Elevation differences in the project area range up to 4 meters (12 feet) from the Symrna River to the terrace edge north of the river. These elevation differences are large enough to significantly influence distributions of plant communities (Braun 1967:246-247). Water courses tend to be deeply incised and are lined by a veneer of relatively recent sediments that is thin along the upper reaches of drainages and thickens toward their mouths (Kraft et al. 1976:13). Some cobble beds are present and provide good sources of raw material for the manufacture of stone tools. Water resources are abundant and

consist of variously sized streams which originate in the Mid-Peninsular Drainage Divide and flow east into the Delaware River or west into the Cheseapeake Bay. Most streams are tidal and the saltwater/freshwater mix allows for a wide range of resources.

The High Coastal Plain can be distinguished from the Low Coastal Plain primarily by textural differences in the Columbia sediments of these two areas (Jordan 1964). The reworking of these sediments, predominantly sands, has produced a flat and relatively featureless landscape. Within the Low Coastal Plain there are a number of smaller environmental zones. These additional sources of environmental variability are generally distributed in broad belts parallel to the Delaware River and Bay shore. The project area is included within the Delaware Shore zone which includes the remnant terraces of the Delaware River as well as the various tidal marshes which fringe the Delaware Bay and extend well up the drainages from the Bay Shore. The southern end of the project area is located within such a setting.

The project area itself consists of a bluff on the north side of the Smyrna River and a low-lying area of tidal marsh on the south side. Analysis of DelDOT drill core records from the construction of the existing bridge and road by Dr. James Pizzuto of the University of Delaware Department of Geology indicated that the segment of the project area south of the Smyrna River has been a poorly drained marsh or swamp for the past 15,000 years (Figure 3). The bluff on the north side of the Smyrna River probably supported a mixed hydrophytic association of deciduous trees for much the same time period. During the 19th and early 20th centuries, the Flemings Landing area consisted of

FIGURE 3
Subsurface Profile Information for Bridge #452



dispersed farmsteads, agricultural fields and pastures, woodlots, and limited commercial facilities such as a country store, wharf and warehouse. Beginning in the mid-20th century, most of the evidence of the extensive commercial activity which took place in the area has been destroyed.

REGIONAL PREHISTORY

The prehistoric archaeological record of the Delaware Coastal Plain can be divided into four blocks of time: The Paleo-Indian Period (ca. 12,000 B.C. - 6500 B.C.), The Archaic Period (6500 B.C. - 3000 B.C.), the Woodland I Period (3000 B.C. - A.D. 1000), and the Woodland II Period (A.D. 1000 - A.D. 1650). A fifth time period, the Contact Period, may also be considered and includes the time period from A.D. 1650 to A.D. 1750, the approximate date of the final Indian habitation of northern Delaware in anything resembling their pre-European Contact form. Each of these periods is described below and the descriptions are summarized from Custer (1984) and Custer and DeSantis (1986).

Paleo-Indian Period (12,000 B.C. - 6500 B.C.)

The Paleo-Indian Period encompasses the time period of the final disappearance of Pleistocene glacial conditions from Eastern North America, and the establishment of more modern Holocene environments. The distinctive feature of the Paleo-Indian Period is an adaptation to the cold, and alternately wet and dry conditions at the end of the Pleistocene and the beginning of the Holocene. This adaptation was primarily based on hunting and gathering, with hunting providing a large portion of the diet. Hunted animals may have included now extinct

megafauna and moose. A mosaic of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals throughout northern Delaware, and watering areas in the study area, would have been particularly good hunting settings.

Tool kits of Paleo-Indian groups were oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials has been noted and careful resharpening and maintenance of tools was common. A lifestyle of movement among the game attractive environments has been hypothesized with the social organizations being based upon single and multiple family bands. Throughout the 5500 year time span of the period, the basic settlement structure remained relatively constant with some modifications being seen as Holocene environments appeared at the end of the Paleo-Indian Period.

Numerous Paleo-Indian sites are noted for the Delaware Coastal Plain. Most of the sites are associated with poorly drained swampy areas and include the Hughes Paleo-Indian complex near Felton.

Archaic Period (6500 B.C. - 3000 B.C.)

The Archaic Period is characterized by a series of adaptations to the newly emerged full Holocene environments. These environments differed from earlier ones and were dominated by mesic forests of oak and hemlock. A reduction in open grasslands in the face of warm and wet conditions caused the extinction of many of the grazing animals hunted during Paleo-Indian times; however, browsing species such as deer flourished.

Sea level rise is also associated with the beginning of the Holocene in Delaware. The major effect of the sea level rise would have been to raise the local water table, which helped to create a number of large interior swamps. Adaptations changed from the hunting focus of the Paleo-Indian to a more generalized foraging pattern in which plant food resources played a more important role. Large swamp settings apparently supported large base camps, but none are known from the study area. A number of small procurement sites in favorable hunting and gathering locales such as bay/basin features are known from Delaware's Coastal Plain.

Tool kits were more generalized than earlier Paleo-Indian tool kits and showed a wider array of plant processing tools such as grinding stones, mortars, and pestles. A mobile lifestyle was probably common with a wide range of resources and settings utilized on a seasonal basis. A shifting band-level organization which saw the waxing and waning of group size in relation to resource availability is evident.

Woodland I Period (3000 B.C. - A.D. 1000)

The Woodland I Period can be correlated with a dramatic change in local climates and environments that seem to be part of events occurring throughout the Middle Atlantic region. A period of shifting wet and dry climates lasts from ca. 3000 B.C. to 1000 B.C. and in some areas mesic forests were replaced by xeric forests of oak and hickory. Grasslands also again became common. Some interior streams dried up; however, the overall effect of the environmental change was an alteration of the environment, not a degradation. Continued sea level rise and a reduction in

its rate also made many areas of the Delaware River and Bay shore the sites of large brackish water marshes which are especially high in productivity. The major changes in environment and resource distributions caused a radical shift in adaptations for prehistoric groups. Important areas for settlements include the major river floodplains and estuarine swamp areas. Large base camps with fairly large numbers of people are evident in many settings in the Delaware Coastal Plain, such as the Barker's Landing, Coverdale, Hell Island, and Robbins Farm sites. These sites seem to have supported many more people than previous base camp sites and may have been occupied on a year-round basis. The overall tendency is toward a more sedentary lifestyle.

The tool kits show some minor variations as well as some major additions from previous Archaic tool kits. Plant processing tools become increasingly common and seem to indicate an intensive harvesting of wild plant foods that may have approached the efficiency of agriculture by the end of the Woodland I Period. Chipped stone tools changed little from the preceding Archaic Period; however, broad-blade, knife-like processing tools became more prevalent. The addition of stone, and then ceramic, containers is also seen. These items allowed the more efficient cooking of certain types of food and may also have functioned for storage of certain surplus plant foods. Storage pits and semi-subterranean houses are also known for the Delaware Coastal Plain during this period from the numerous sites.

Social organizations also seem to have undergone radical changes during this period. With the onset of relatively

sedentary lifestyles and intensified food production, which might have produced occasional surpluses, incipient ranked societies began to develop as indicated by the presence of 1) extensive trade and exchange in lithic materials for tools as well as non-utilitarian artifacts, 2) caching of special artifact forms and utilization of artifacts manufactured from exotic raw materials. The data from cemeteries of the Delmarva Adena Complex (ca. 500 B.C. to A.D. 0), such as the Frederica Adena Site and the St. Jones Adena Site (Thomas 1976), indicate that certain individuals had special status in these societies and the existence of a simple ranked social organization is hypothesized. Similar data from the Island Field Site show that these organizations lasted up until A.D. 1000, although they may not have always been present throughout all of the Woodland I Period. In any event, by the end of the Woodland I Period a relatively sedentary lifestyle is evident in Delaware's Coastal Plain. It should also be noted that the greatest number of archaeological sites in the project area date to the Woodland I Period and the Mid-Drainage zone is the focus of most of the important sites of this period.

Woodland II Period (A.D. 1000 - A.D. 1650)

In many areas of the Middle Atlantic, the Woodland II Period is marked by the appearance of agriculture food production systems; however, in the Delaware Coastal Plain there are no clear indications of such a shift. Some of the settlements of the Woodland I Period, especially the large base camps, were also occupied during the Woodland II Period and very few changes in basic lifestyles and overall artifact assemblages are evident. Intensive plant utilization and hunting remained the major

subsistence activities up to European Contact. There is some evidence, nonetheless, of an increasing reliance on plant foods and coastal resources throughout the Woodland II Period in the study area. Social organization changes are evidenced by a collapse of the trade and exchange networks and the end of the appearance of elaborate cemeteries.

Contact Period (A.D. 1650 - A.D. 1750)

The Contact Period is an enigmatic period of the archaeological record of Delaware which began with the arrival of the first substantial numbers of Europeans in Delaware. The time period is enigmatic because few Native American archaeological sites that clearly date to this period have yet been discovered in Delaware, although numerous Contact Period sites are evident in southeastern Pennsylvania. It seems clear that Native American groups of Delaware did not participate in much interaction with Europeans and were under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ended with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

REGIONAL HISTORY

The following regional history is abstracted from three previous DelDOT reports (Coleman et al. 1984; Coleman et al. 1985; Custer, Bachman, and Grettler 1986). A more detailed history of the specific sites within the Flemings Landing bridge replacement is contained in the discussion of background research.

The earliest colonial settlement in Delaware known as Swanendael ("valley of swans") was made at present Lewes in 1631 under the sponsorship of patroons of the Dutch West India Company for the purpose of whaling and raising grain and tobacco. This venture was privately financed, but it ended in tragedy when the all-male population was massacred by the local Indians in 1632. Farther north a group of Swedes in the employ of the New Sweden Company built Fort Christina in 1638 at the confluence of the Brandywine and Christina Rivers in what is now part of the present city of Wilmington and established the first permanent European settlement in Delaware. The Swedish government supported the venture, and Fort Christina became the nucleus of a scattered settlement of Swedish and Finnish farmers known as New Sweden.

The Dutch claimed the identical land -- from the Schuylkill River south -- by right of prior discovery, and in 1651 the West India Company retaliated by building Fort Casimir at New Castle in an attempt to block Swedish efforts to control commerce in the Delaware River. The Swedes captured this fort in 1654 and renamed it Fort Trinity. Rivalry between Swedes and Dutch continued, and the Dutch recaptured Fort Trinity in 1655, and also seized Fort Christina. As a result, New Sweden went out of existence as a political entity. Nonetheless, the Swedish families continued to observe their own customs and religion.

In 1657, as a result of peaceful negotiations, the City of Amsterdam acquired Fort Casimir from the West India Company, and founded a town in the environs of the fort called New Amstel. This was a unique situation in American colonial history in that

a European city became responsible for the governance of an American colony. A small fort was also erected at Lewes in 1659 for the purpose of blocking English intrusion, and a few settlers built homes there including 41 Dutch Mennonites who established a semi-socialistic community in July of 1663. They, too, were under the supervision of local officials appointed by the burgomasters of Amsterdam. By the early 1660's, Dutch claims included all land from the Christina River to Bombay Hook.

English hegemony of the region began in 1664 when Sir Robert Carr attacked the Dutch settlement at New Amstel on behalf of James Stuart, Duke of York, brother to Charles II. This was an important move on England's part to secure her economic position in the New World. New Amstel, renamed New Castle, was besieged and sacked by English soldiers and sailors resulting in the deaths of three Dutch soldiers and the wounding of ten others. English troops plundered the town, and English officers confiscated property, livestock, and supplies belonging to the City of Amsterdam, as well as the personal property and real estate owned by the local Dutch officials. The homes of the Mennonites and other settlers at Lewes were also pillaged.

A transfer of political authority from Dutch to English then followed, and the Dutch settlers who swore allegiance to the English were allowed to retain their lands and personal properties with all the rights of Englishmen. Former Dutch magistrates continued in office under English authority, and Swedes, Finns, and Dutch all peacefully accepted the rule of the Duke of York through his appointed governors. In 1682, the granting of proprietary rights to William Penn and his

representatives gave economic and political control of the Delaware region to Philadelphia, the new seat of government (Munroe 1978).

The settlement pattern for this early period was one of dispersed farmsteads located along the Delaware and its tributaries, such as the Christina, Appoquinimink, Smyrna (Duck), Blackbird Creek, and Leipsic Creeks, where the land possessed good agricultural qualities. With water transportation the major mode of travel and commerce in the late 17th and early 18th century most of the lands granted in Delaware had frontage on a navigable stream or waterway. The early grants in the Throughfaire Neck area support this fact.

With the arrival of Penn in the 1680's, settlers pursued an individualistic system of land settlement, with the proprietors granting tracts or parcels of land. Penn usually granted land to families, with the standard size being about 500 acres. In the study area, property sizes at the end of the seventeenth century ranged between 100 and 700 acres. The median size of land warrants granted in 1735 in Kent and New Castle counties was between 200 and 300 acres, with the typical grant close to 200 acres (Penna. Archives 1891:193-202). Larger grants, however, were not uncommon. This trend towards smaller average holdings as compared to seventeenth century grants was due to a tendency for large grants and tracts to be divided and subdivided by sale and inheritance. If New Castle County and southeastern Pennsylvania can be used as a rough comparison, the density of rural settlement in northern Kent County was approximately 5 households per square mile (Ball 1976:628). For more poorly

drained parts of the study area, particularly those along upland swamps, this density is expected to have been lower.

By 1683 the cultivated areas of the region consisted of the three lower counties, New Castle, Kent, and Sussex, and three Pennsylvania counties, Philadelphia, Buckingham (Bucks), and Chester. New Castle and Sussex Counties had been founded in 1673 and in 1680 Governor Andros established St. Jones (Kent) with Duck Creek the northern boundary and Cedar Creek the southern boundary. Boundary conflicts soon developed in St. Jones County, which was renamed Kent by 1683. The border with New Castle County was Duck (Smyrna) Creek, but as the creek did not extend very far to the west, the western part of the boundary was left undefined. Even more significant were rival claims by the Calverts in Maryland. The Delaware-Maryland border, particularly along northern Kent County, was hotly disputed until it was permanently fixed in 1765. Specific efforts by both Penn and Calvert to establish settlements along the disputed boundary provides an excellent example of the influence of proprietary decisions and endemic boundary disputes in determining historic settlement patterns.

The total population of New Castle, Kent, Sussex, Philadelphia, Buckingham, and Chester counties in 1683 has been estimated at approximately four thousand people. In New Castle County five tax districts, called Hundreds, had already been established by 1687. With the growth of the population, four more hundreds were created in 1710, including Appoquinimink Hundred, which includes the study area (Conrad 1908:287). In 1875, an act of the legislature divided Appoquinimink Hundred

into two hundreds with the northern portion retaining the name Appoquinimink and the southern portion being named Blackbird Hundred.

With the exception of the port towns of Philadelphia and New Castle, there were no other major commercial or social centers in the area during the seventeenth century. The small clusters of dwellings, sometimes known as hamlets, that sprang up were situated either on the major transportation routes of the period, or on a navigable watercourse. The most prosperous of these communities were those located so as to take advantage of both forms of transportation. The villages of Duck Creek and Cantwell's Bridge (present-day Odessa) were the only hamlets of any size near the study area and both were located on major rivers and roads.

In the New Castle County region, water transportation was a major mode of travel and commerce in the late seventeenth century. Most of the farmstead tracts and land grants had frontage on, or access to, a watercourse for transportation (Hoffecker 1977). In a country that was either heavily wooded with a mixture of oaks, walnut, hickory, chestnut, and maple, or that was poorly drained and swampy, water travel was the easiest, safest, and most effective means of transport. Overland travel was extremely difficult, because roads were few in number and very poor. The few existing roads led to landings on rivers and the Delaware Bay where produce and goods were shipped by cheaper, and more efficient, water transport. The Delaware River and Bay served as a major focus of water transportation because the majority of Delaware's streams flow eastward to these bodies.

For this reason the large port city of Philadelphia, and to a lesser extent Wilmington and New Castle, exerted major commercial influence on the Delaware counties throughout the eighteenth century and later. Wilmington, New Castle, and Lewes were also ports for ocean-going vessels involved in export trade. Overland transport was limited to a few major roads, such as the eighteenth century post road which connected Philadelphia, Wilmington, New Castle, Odessa, Middletown, Dover, and Lewes with a western branch at Milford linking it to the Chesapeake Bay. Small secondary roads and paths interconnected numerous villages and hamlets and were relatively common within the study area.

Swedish settlers in the region grew rye and barley on their farms, but later immigrants quickly replaced these grains with wheat when it was found that it could be grown more easily. More importantly, it was realized that wheat was a marketable commodity, and the farmers and settlers in the area soon shifted from a subsistence-oriented agricultural system to one which was market-oriented. Wheat, and to a lesser extent corn, were grown and then shipped by water to local milling sites. The transportation of grains to milling sites supported an extensive coastwide trade employing shallops or other similar boats. Milling sites were among the earliest manufacturing complexes in the region. Millworks in the agrarian areas were frequently multi-functional with water-powered grist, saw, and cloth fulling operations being performed at different seasons at the same location. There was a mill in New Castle by 1658, and several on Throughfare Neck by the late 17th century (Pursell 1958).

Villages such as Christiana Bridge, Newport, and Appoquinimink grew larger as a result of this shipping trade, and became market places for the surrounding countryside. Dover and Smyrna slowly emerged as the two largest towns in Kent County, with markets and landings attracting new settlers. Lebanon, Camden, Milford and Frederica were also established communities by this time. The population of Kent County in the study area grew through both natural increase and the continued movement of new peoples into the area from Maryland, Pennsylvania, the other two counties of Delaware, and Europe, particularly Great Britain. A census taken privately in 1760 gave the population of Kent County as 7,000 individuals (Conrad 1908:580).

The general rise in land prices in Delaware in the late eighteenth century reflected the development of larger regional and extra-regional markets for Delaware agricultural products, particularly wheat. The development of larger markets in turn spurred the growth of established urban areas, most notably Wilmington, and the establishment of smaller cities and towns throughout the agriculturally productive areas of the state. Middletown, Salisbury (Duck Creek Crossroads), Noxontown, and Dover were established trade and service centers along the Dover-Lewes post road by the mid eighteenth century. The profitability of wheat accelerated a trend towards large-scale, market-oriented small grain agriculture already well established in Kent and New Castle Counties. By the start of the eighteenth century, the region was beginning to be recognized as a wheat and grain producing area.

Appoquinimink Hundred and the rest of New Castle County were part of a broader regional economy that was centered in Philadelphia, which quickly began to dominate the economies of the lower Delaware Valley during the last quarter of the seventeenth century. New Castle County was part of Philadelphia's agricultural and commercial hinterland, along with western New Jersey, northeast Maryland, southeastern and northeastern Pennsylvania, and Kent and Sussex counties in Delaware. Farmers in the region sent their grains to the local milling centers, and the wheat flour was then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The farmers and merchants in New Castle County quickly adapted to this market system of agriculture. It is estimated that over one-half of the farmers in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163). Important landings included Brick Store, Hay Point and Short landings along the Smyrna River; Dona, Naudain and White Hall landings along the Leipsic River; and Lebanon, Forest, and White House landings along the St. Jones. Landings, as well as towns and hamlets in the area grew, and sometimes declined, according to local and regional economic conditions.

Settlement in New Castle County during the 18th century continued much as it had in the previous century. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755. Many were Scotch-Irish, most of whom were indentured servants. By the mid-eighteenth century, white indentured servants were as numerous as black slaves. Slightly

less than one-half of the blacks in the state in 1790 were free; however, by 1810, less than one-quarter of blacks were slaves according to federal censuses. Free black labor played an increasing role in farm production in Delaware as ethical and economic factors reduced the profitability of slavery prior to the Civil War. After Emancipation, black labor continued to be a significant factor in farm production.

As the overland road transportation network improved, colonists began to move inland away from the navigable rivers and streams. Good, productive land was settled first, but as the population began to grow, marginal land was also occupied. The size of farms in New Castle County ranged between 100 and 200 acres, indicating a decline in size from the seventeenth century, due to a tendency for the large grants and tracts to be divided and subdivided by sale and inheritance (Munroe 1954:19). In the study area, settlement of patented tracts began in earnest in the first quarter of the eighteenth century.

Lemon (1967; 1972) has divided the eighteenth century in the Philadelphia region into three periods of urban growth. The first period (1700 to 1729) was one of urban stagnancy after the initial rapid growth of the seventeenth century. However, hamlets which are defined here as unplanned towns that sprang up at crossroads and around taverns, ferries, churches, and mills, did begin to appear at this time. Ogletown, in White Clay Creek Hundred, and the Mermaid Tavern intersection on Limestone Road, are examples of eighteenth century hamlets in New Castle County. Both were located at crossroads on major transportation routes.

The second period of urbanization that Lemon recognizes (1730 to 1765) saw a renewal of town growth based on internal trade. Towns such as Newport, Cuckholdstown (modern Stanton), Milltown, Hockessin (then known as "Ockesson") and Newark were established and prospered during this period. Christina Bridge, which had stagnated since initial settlement in the 1680's, began a remarkable period of growth and prosperity as a major grain transshipment port for agricultural products from Delaware and the Upper Chesapeake Bay area. Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, Wilmington soon became a port of entry and a post town, and was an important link in the Philadelphia trading network. Of special significance was the city's proximity to the Brandywine Mills. Wilmington was thus a receiving center for local and regional farm produce brought by water from Christina, Stanton, and Newport, and then shipped up the Delaware to Philadelphia (Lindstrom 1978; Walzer 1972).

Lemon's third period of urban development (1766-1800) was marked by less noticeable town growth which paralleled more erratic economic patterns. Little growth in the towns of New Castle County took place during this period. However, increases in population and land tenancy were noted (Lemon 1972:216) and in New Castle County this period witnessed a rapid growth in inland transportation routes.

The conditions of roads in New Castle County improved considerably over the course of the eighteenth century, but in some locations they were still unsatisfactory even by contemporary 18th century standards. Most improvement was due to

increased population growth and interregional trade. By 1750, the roadbeds of many of the area's present-day state roads were already established. The extensive road construction and reconstruction that began in the mid-18th century was preceeded by a 1752 Act of the Legislature directed to "erecting public bridges, causeways, and laying out and mantaining highways" (Laws of the State of Delaware 1797). Because the public roads were not adequately maintained, an additional Act was passed in 1762 "for the better regulation of the roads in New Castle County". This act established a statewide system of King's Roads which were to receive the highest priority for maintenance and improvement. Prior to the Revolutionary War, all of the roads in the area were simply intra-regional connectors to locations in the surrounding area.

The first road to be laid out through the project area in Throughfaire Neck dates to 1780 when it was ordered by the court of quarter sessions that a road be constructed from Duck Creek Town (Smyrna) to Nicholas Barlow's House at the Throughfaire. The "Throughfaire" was named for a mile-long canal cut sometime before 1740 through the northern head of Bombay Hook Island to the main branch of Duck Creek. Duck Creek had formerly entered the Delaware Bay at the southern end of Bombay Hook Island. This canal saved 13 miles for vessels traveling from the Delaware Bay to Smyrna Landing and other landings on Duck Creek. By 1782, a road had been laid out from a landing on Duck Creek at George Ward's (now Flemings Landing), over the old drawbridge on Blackbird Creek intersecting the State Road at or near Duncan Beards House, outside of Cantwells Bridge. This roadway is the

present day Delaware Route 9. The 1820 publication of the Heald Map of Roads of New Castle County shows that by this time the present day road system was essentially completed. After 1820 and throughout the 19th century, no additional major roadways were added in this area as can be seen from a comparison of the 1849 Rea and Price Map (Figure 4) with the 1868 Beers' Atlas (Figure 5), and Baist's 1893 Atlas (Figure 6).

Farming in the eighteenth century in New Castle County continued to be a system of mixed husbandry, combining the cultivation of grains with the raising of livestock. Farming was the most important occupation for between 80 and 90 percent of the area's population (Egnal 1975). Wheat remained as the primary grain produced, followed by rye, corn, barley, oats, and garden vegetables. In many areas, generations of repeated tillage had begun to exhaust the soil. Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1972:179).

Delaware's manufacturing capacity in this century began to become realized. During the 18th century the iron industry, lumber products, and grain milling enterprises continued to grow and prosper. New industries were started that engaged in the preparation of snuff from tobacco, the production of salt from brines in lower Delaware, and the rudimentary beginnings of the textile industry. By the end of the century, Delaware was one of the leading manufacturing states and Wilmington and its environs constituted one of America's leading industrial areas.

In the northern Delaware area, the nineteenth century was marked by rapid industrial and urban growth and population

**Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds,
from Rea and Price "Map of New Castle County, Delaware" (1849)**



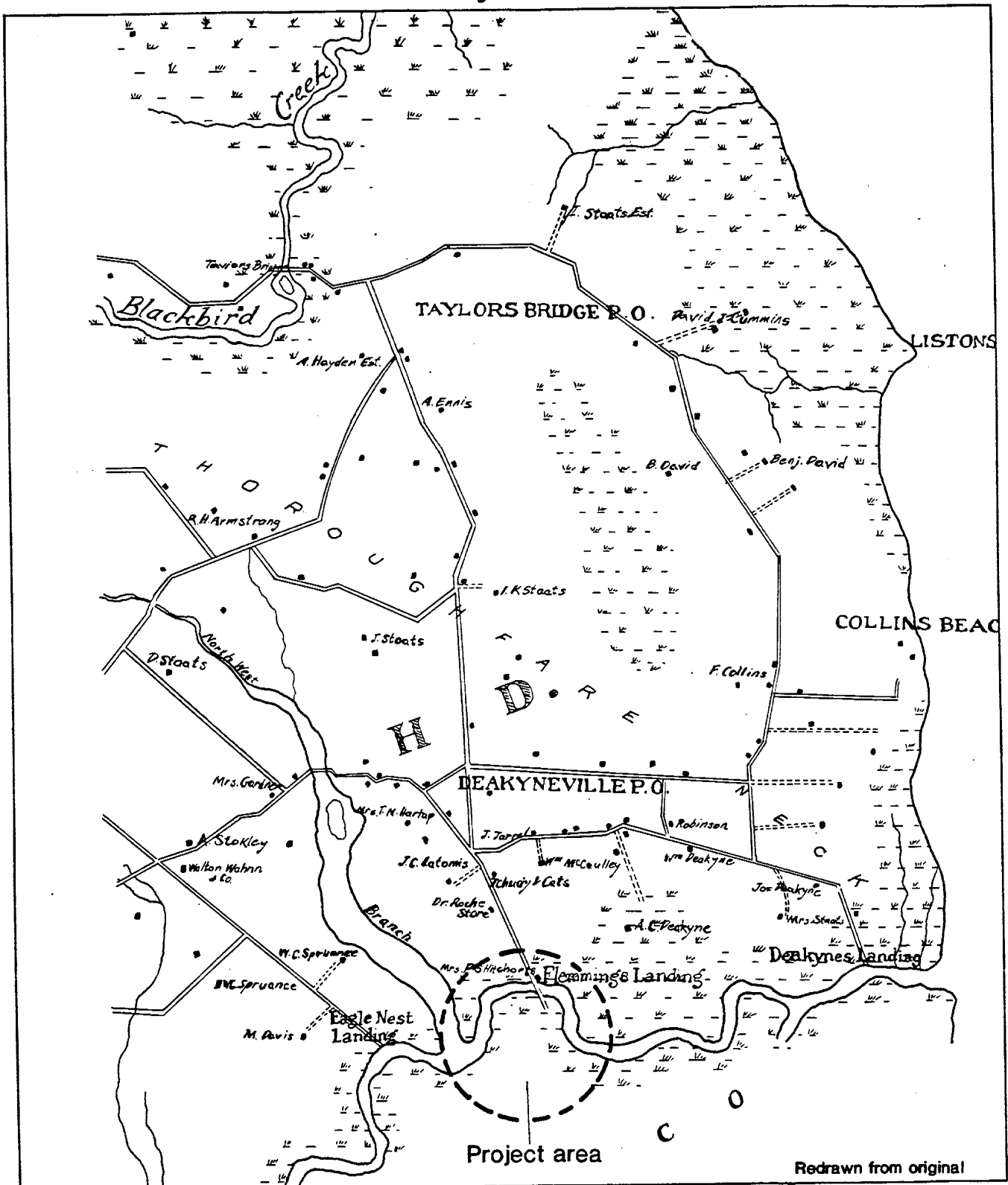
FIGURE 5

Detail of Flemings Landing, Appoquinimink and Duck Creek Hundreds, from D. G. Beers' "Atlas of the State of Delaware" (1868)



FIGURE 6

Detail of Flemings Landing, Blackbird and Duck Creek
Hundreds, from G.W. Baist's "Atlas of New Castle
County" (1893)



expansion, and was accompanied by a noticeable decline in the number of people engaged in agriculture. The rapid growth of the population during the early decades of the century forced many new farmers in the Middle Atlantic area to clear and farm lands of poor or marginal quality. Many of these farmers were hard pressed to turn a profit from their farmsteads, and this resulted in an outmigration of a large portion of the population during the 1820s and 1830s to better lands to the west, particularly in the Ohio River Valley (Hancock 1947). The loss of jobs related to agriculture was partly offset by the development of new sources of income and employment, particularly in urban and industrial contexts. Thus, much of the surplus population that had in previous centuries been farm laborers, tenants, or unemployed, moved into urban and industrial centers where jobs were more plentiful. These trends occurred over the first half of the nineteenth century, and by 1860 were well established (Lindstrom 1979).

According to the 1810 national census, the population of Kent County was 20,495 persons. Marginal farm lands were being increasingly settled as good, well-drained lands with access to markets were becoming more scarce. The move inland from navigable waterways apparent by the late eighteenth century began with the influx of new populations, particularly from England. This period of growth from the late eighteenth to early nineteenth centuries, however, was short lived with the population of Kent County actually decreasing in the late 1810s to the 1830s. By 1840 the population of Kent County, according to the national census, had declined to 19,872 persons. The

outmigration of large numbers of Delawareans in the early nineteenth century was caused in part by the sharp decrease in demand for Delaware agricultural products following the end of the War of 1812 and the Napoleonic Wars. Both conflicts had created an inflated market for American agricultural products, particularly wheat and other cereal crops.

Urbanization in New Castle County during the first quarter of the century was closely tied to transportation routes and agricultural and industrial production. However, most of the towns of importance in the eighteenth century, which were settled because of their location on major transportation arteries, remained major marketing, milling and shipping centers for only a brief period into the nineteenth century.

In the first half of the nineteenth century, methods and routes of transportation underwent substantial changes in New Castle County as first turnpikes, then canals, and finally railroads were introduced. Throughout the century, improved transportation was the key to urban, agricultural, and industrial development. By 1820, Appoquinimink Hundred had 98.8 miles of roads, rating it first out of the nine hundreds in New Castle County in the proportion of roads to surface area.

Canals became important transportation facilities during the 19th century and the most significant canal built in Delaware was the Chesapeake and Delaware Canal, completed in 1829. Originally planned to connect the Elk and Christina Rivers, it was later constructed across the peninsula below New Castle, just north of Reedy Island. The canal was expected to bring wealth and prosperity to the communities of northern Delaware and, in fact,

two new towns were constructed at the termini of the Canal, Delaware City and Chesapeake City. Instead of widespread prosperity, however, the canal contributed to the economic decline of Christina, Newport, Stanton, and New Castle, as goods previously shipped overland across the peninsula could now be sent more cheaply by water. Even Chesapeake City and Delaware City were disappointed in their expected economic boom, and growth in these towns was slow. Although not the original purpose of its construction, the Canal also came to serve as a border between two distinct socio-cultural sections of Delaware: the industrial/commercial area of northern New Castle County, and the agrarian communities of southern New Castle, Kent, and Sussex Counties. The Canal continued to function as a borderline throughout the remainder of the century, and does so today.

Railroads came to New Castle County in the 1830s. The first line, the New Castle and Frenchtown Railroad, was constructed in 1832 as a direct result of the opening of the Chesapeake and Delaware Canal, and was an effort to compete with that transportation route (Hoffecker 1977:43). In 1838, the Philadelphia, Wilmington, and Baltimore Railroad was completed, and quickly became the major transportation route across the peninsula. This complemented existing water-based transportation systems and provided transportation of northern Delaware produce to the growing eastern markets. Locally, the advent of the railroad, and with it cheaper and more efficient means of transporting goods and produce, marked the end of the prevalence of small market towns. In conjunction with the general economic demise of these locations, taverns, hotels, and stores also

disappeared from the landscape.

At the start of the 1800s, however, agriculture in New Castle County was in a dismal situation. Farming practices continued much as they had during the previous century with the use of the four field system of cropping. Wheat was the dominant crop with fruit and vegetable crops of lesser importance and the use of fertilizers was infrequent. A large number of tenant farmers worked the land. Production was, on the whole, quite low during the first quarter of the century. Corresponding to the decline in wheat prices and increased competition for good land was a significant decrease in the fertility of agricultural lands throughout the state. Poor farming methods, erosion, and exhausted land contributed to the economic woes of Delaware farmers. Increased opportunities in urban areas and the West also served to draw people from Delaware, and Kent County in particular. As more and more people left Delaware, the resulting labor shortage made the cultivation of marginal and exhausted lands even less profitable. The economic crises of the first decades of the nineteenth century helped to spur the beginning of an agricultural revolution throughout Delaware. The first agricultural improvement society in Kent County was formed in 1835. In 1836 the General Assembly authorized the first state geological survey under James C. Booth to analyze soils, locate sources of fertilizers, and advise farmers throughout the state. A number of factors worked in conjunction to establish Kent County, and Delaware as a whole, as an important agricultural producer. The discovery of marl, a natural fertilizer, during the construction of the Chesapeake and Delaware Canal in the

1820s enhanced the productivity of Delaware agriculture. The opening of the canal in 1829 further encouraged the production of market-oriented crops by providing for the more efficient transportation of perishable goods.

The 1818 revival of the New Castle County Agricultural Society, one of the first such organizations in the nation, encouraged farmers in the use of improved drainage techniques, fertilizers, and machinery. With these developments, New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Fertilization, farm machinery, and improved drainage were helpful in this agricultural success, but the county's rich natural resources, its fine transportation network, and the proximity of cities were advantages with which other areas, particularly Kent and Sussex Counties, found it difficult to compete in quantity and number of agricultural and raw products.

From the 1830s to the 1870s Delaware was the center for peach production in the eastern United States. Rich soil, favorable climate and rainfall, excellent transportation facilities, and strategic location near large markets made peach production a lucrative enterprise. Delaware City with its canal location led Delaware and New Castle County in production until the 1850s. The peach industry was hindered in Kent and Sussex counties until the 1850s due to transportation limitations. Early attempts there failed because producers could not move fruit to market economically. Rail service into the area and the absence of the peach blight in the southern counties made peaches profitable into the 1870s.

By the end of the "peach boom", massive harvests were being shipped by rail and steamship lines to New York where much was readied for resale to the northern states. The spread of a disease known as the "Yellows" devastated orchards throughout the state and brought an end to the boom. However, until the peach blight curtailed production, the peach industry proved profitable for a large number of peach growers, as well as a variety of support industries. Basket factories, canneries, and peach tree nurseries all aided in and reaped the financial rewards of the peach industry.

Throughout the nineteenth century, and into the twentieth century, agriculture in Delaware continued to focus on perishable products with a decrease in staples. More diverse crops, including tomatoes, apples, potatoes, and other truck produce became more common in response to the demands of markets in New York, Philadelphia, Baltimore, and other cities. The number of acres cultivated in Kent County rose from approximately 283,000 acres in 1850 to 338,000 acres by 1900. Poultry and dairy production also increased significantly in this period in Delaware, particularly in Kent and Sussex Counties.

Concurrent with the rise in importance of truck crops and dairy products in the late nineteenth century was the improvement of transportation throughout the state. The completion of the Delaware Railroad trunkline through to Seaford in 1856 encouraged the production of such goods by providing quick and cheap access to regional markets. Prior to the Delaware Railroad, steamboats and other water craft provided areas of Kent County with cheap and efficient transportation. Smyrna Landing, for example, was

an important landing and warehouse district well into the twentieth century.

Tenant farming, which had been quite common in the eighteenth century, became even more prevalent during the nineteenth century. Large landowners, having acquired much of their holdings during the hard times of the 1820s and 1830s, leased their lands to tenants. Most land owners were white farmers, while some tenants and farm laborers, particularly in Kent and Sussex counties, were black. In other cases, the tenant was a member of the land owner's family. By 1900, over 50% of all the farmers in Delaware were tenants or share croppers. Tenancy remained a dominant farming practice into the twentieth century (Bausman 1933:165). In Kent County almost 50% of the farmers were tenants as late as 1925. The late 19th and early 20th centuries also saw the continued growth of different ethnic communities in Kent County, particularly Amish and Mennonites.

The agricultural trends identified in the late nineteenth century continued relatively unchanged well into the twentieth century. Corn and wheat declined in importance due to competition from the western states. By 1880 alfalfa, legumes, and vegetable and fruit crops were increasing in importance and by the mid-twentieth century had become more profitable than wheat. Dover was still the largest city in Kent County, although smaller than Wilmington and Newark. Smyrna, Leipsic, Little Creek and other towns in the eastern part of Kent County also expanded slightly during this period.

Regional development during the nineteenth century was much more complex than in the previous decades, primarily due to the

great strides in industrialization, urbanization, and transportation that were part of the Industrial Revolution. The first half of the century witnessed a noticeable decline in Philadelphia's economic influence over the region, caused by Baltimore's rise, the competition for markets between the two cities, and a drop in the consumption by both local and foreign markets of Philadelphia's agricultural produce due to the development of mid-western centers of production. The area responded by diversifying its agricultural production, but primarily it devoted increasingly more of its resources to manufacturing (Lindstrom 1978:122).

Light manufacturing, including carriage making and cabinetmaking, and foodstuff processing, including canning and juice/syrup production, became an important part of the Delaware economy. Smyrna and Dover were the sites of most of this commercial and manufacturing activity, although other areas including Camden-Wyoming and Frederica were involved. The International Latex Corporation, established near Dover in 1939, was the first large manufacturer not utilizing local raw materials to locate in Kent County. Since World War II, other manufacturers, including General Foods and Scott Paper, have located in Kent County, and together represent a significant addition to the economy of the study area.

Much of the reemergence and success of both industry and agriculture in Delaware can be attributed to improvements in transportation facilities which began in the 1830's. The linking of Wilmington by railroad with Baltimore and Philadelphia in 1837 provided Wilmington and its hinterland with excellent

markets both for the purchase of raw materials and the sale of finished products. Contained within this hinterland was also a sizeable population of skilled mechanics and machinists who were able to perform the skilled labor required by the new technologies. This combination of good transportation, a large, trained labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly into the 20th century (Hoffecker 1977).

The patterning and density of settlement in Delaware, and the study area specifically, have been strongly influenced by several factors throughout its history: 1) an agrarain economy; 2) the commodity demands of large markets, first Europe and the West Indies, and later domestic commercial-industrial centers, and 3) transportation facilities. The completion of the Dupont Highway in 1923 linked the northern and southern sections of the state and helped to complete the shift in agricultural production towards non-local markets and open new areas to productive agriculture. Improved transportation in the twentieth century also brought a decline in the importance of the many small crossroad and "corner" communities that had sprung up in the late eighteenth and nineteenth centuries.

RESEARCH METHODS

Phase I research consisted of two steps: 1) background and archival research, and 2) field survey. Background and archival research consisted of consultation with the staff of the Delaware Bureau of Archaeology and Historic Preservation (BAHP), review of all inventories of prehistoric and historic cultural resources

maintained by the BAHP, review of historic atlases and maps, interviews with local landowners and experts in local history, review of archival materials such as deeds, tax assessments, probate records, road books and petitions, and other court records, and inspection of Soil Conservation Service aerial photographs. Primary documentary research was focused in the time period prior to 1850, because historic atlases and maps published after this date contained basic information regarding site location and ownership necessary for the completion of a Phase I Survey. Earlier time periods, on the other hand, have no such readily accessible sources, and more effort was devoted to these periods. The background research for prehistoric sites included a review of prehistoric archaeological literature on applicable predictive models (Custer 1984, 1986; Custer and Wallace 1982; Custer and DeSantis 1986; Gardner 1978).

Survey methods for the Phase I field reconnaissance survey included a pedestrian survey of the entire ROW to reveal cultural resources such as standing structures or structural foundations which might be present, and to determine the general nature of the corridor for subsequent application of surface survey or subsurface testing. In areas of low visibility augering was carried out to identify areas of undisturbed soils. Preliminary surface collections were systematically carried out where there was sufficient surface exposure. The locations of all cultural material encountered during reconnaissance were marked by flagging.

In areas where surface visibility was low and where undisturbed and buried landscapes were expected, 1m test units

were excavated. All excavated soils were screened through 1/4" mesh, and test units were excavated to a sufficient depth to reach soils too old to contain artifacts. All cultural materials recovered were bagged according to individual test units and excavation levels. Field records for each excavated test unit noted the thickness, color and textural characteristics of soils encountered, and cultural materials recovered. If prehistoric cultural materials were encountered, additional test units were excavated at five or ten meter intervals surrounding the original unit. Based on whether these tests yielded additional cultural material, a decision was made whether or not to undertake Phase II investigations.

Phase II location/identification testing was carried out to determine the National Register eligibility of any sites discovered during the Phase I survey. Phase II testing consisted of the systematic excavation of 1m test units and controlled surface collection to determine the integrity, limits, and stratigraphic context of archaeological sites. In areas adjacent to the Smyrna River, Phase II testing specifically considered the depositional integrity of overlying soils and included preparation of a geological cross section.

RESULTS OF PHASE I AND II INVESTIGATIONS

To facilitate the discussion of cultural resources identified by background research or Phase I field reconnaissance survey, the project area was divided into two segments: 1) from the southern terminus of the project area to the Symrna River; and, 2) from the Symrna River to the northern terminus of the

project area (Figure 2, Plate 1).

SEGMENT 1 - (SOUTH SIDE OF SMYRNA RIVER)

Resource Potential

Prehistoric and Historic. There exists a low potential for the presence of prehistoric resources within this segment of the project area. As was noted earlier, this area is a very poorly-drained marsh adjacent to the main river channel and has been poorly drained over the past 12,000 years. No historic resources are expected for this segment due to the poor drainage as well. Due to the very poorly drained nature of the proposed ROW within this segment no testing was carried out and no further work is recommended.

SEGMENT 2 - (NORTH SIDE OF SMYRNA RIVER)

Background Research

Introduction. Background research on this segment revealed the area to have been the location of an active, but dispersed, hamlet created in the early to mid-19th century. The hamlet at its late 19th century population maximum contained approximately 6 farmsteads, 1 store, a tomato cannery and wharf, a landing operation and storehouse, and a small landing operation associated with the Fleming House. The settlement known today as Flemings Landing was founded in the late 18th century because of its favorable setting within the water transportation network of central Delaware. During the late 18th and early 19th century the landing was first known as Ward's and later as Barlow's Landing. A revitalization took place during the turn of the 20th century with the construction of several new businesses along the

Duck Creek (Smyrna River) and a series of structures fronting present day Route 9. The housing stock was almost totally destroyed during the 1960s and 1970s through acquisition of land by the Shell Oil Company for their Delaware Point refinery project. Since that time, the area has returned to and remains a fairly inactive rural landscape. The present landscape (Plate 1) is almost devoid of structures and which looks nothing like either the 18th or the mid-20th century environment.

Area History. In 1767, the land included within the project area was purchased by John Ward from James Gano to whom the land had been surveyed in 1738. John Ward's landholdings included a large portion of the surrounding area extending southward from Deakyneville to Flemings Landing. (Table 1 shows a summary of deed transactions for the site). During the late 18th century the landing was called Ward's Landing and was operated by George Ward. In 1782, a road was laid out from "a landing at Duck Creek at George Ward's to intersect the Throughfare Road". The Throughfare road ran from Deakyneville across Long Bridge, through Chambersville to the Duck Creek Town. A 1796 survey of lands for Gideon Emory indicates that George Ward's Landing was comprised of upper and lower wharves. No other specific information is known about the landing operation during this time period. From 1800 to 1809 the tract of land at Flemings Landing was partially purchased and partially inherited by Nicholas Barlow from his wife's family. With this and other lands Nicholas Barlow owned, the "mansion farm" tract was formed. According to New Castle County Orphan's Court Records (OC-I-1-582-84), when Barlow received the land in 1809 there were

TABLE 1

SUMMARY OF DEED TRANSACTIONS FOR THE
FLEMINGS LANDING SITE, 1767-1987

Transaction	Date	Deed Reference	Acres
James Gano		Land Grant	?
James Gano, Est John Ward	1767	Y-1-116	382
John Ward to George Ward	1767	Y-1-325	158
George Ward Est to Nicholas Barlow	1803	Z-2-456	158
Nicholas Barlow, decd to sons and daughters	1828	Will	158
Nicholas Barlow, Est. to Joseph Fleming	1828 1856	I-4-20 X-6-456	250
Joseph Fleming to Enoch Fleming	1857	Will W-1-421	250
Enoch Fleming, Est. to Benjamin Nields	1861	N-7-453	200
Benjamin Nields to Jacob Deakyne	1861	N-7-456	200
Isaac Grubb, Shff. to Kent Co. Mutual Ins. Co.	1877		160
Kent Co. Mutual Ins. Co. to Annie Hitchens	1878	C-11-158	160
Annie E. Hitchens to William Coning	1896	A-17-583	160
William Coning to Charles Storz	1915	K-25-303	158
Charles Storz to Samuel A. Fortner	1927	H-35-44	158
Samuel A. Fortner to Louise F. Fortner	1942	Will	158
Louise Fortner to David and Ivison Fortner	1974	Will	158

buildings on the river at the landing. An 1817 tax assessment listing Nicholas Barlow's estate indicates that by this time a good wooden dwelling house, barn, stables, and three storehouses were present on the property. Barlow lived on the property until his death, ca. 1815, and by this time had become a rather wealthy man, owning a large portion of the Cedar Swamp and the lands in Throughfaire Neck, as well as the mansion farm tract. At the time of his death, an inventory of his estate totaled \$19,099.99. Among his possessions were a watch valued at \$15, a clock valued at \$45, a mahogany table, a black walnut table, several beds and bed furniture, and several carpets. He had an ox cart, two wagons with a total value of \$90, and a \$100 riding carriage. On his farm at the time of his death were 7 horses, 3 yoke of oxen, 21 cows, 19 sheep, and 21 hogs. In his meat house were 127 lbs. of beef and 1042 lbs. of pickled pork. In the barn and corn crib were timothy, flax, oats, wheat, corn, and hay. Also in the barn were cedar rails, poplar and oak boards, and two thousand cedar shingles. Based on the limited quantity of surplus goods, it is probable that Barlow operated as more of a middleman in the commercial network than as a true merchant or shopkeeper. Most of his business transactions seem to have involved the exportation of goods (cedar shingles for example) to urban markets in the region such as Wilmington and Philadelphia.

The land went through a series of estate settlements between 1820 and 1830. Joseph Fleming (son-in-law to Nicholas Barlow) purchased the rights to the mansion farm and the tracts of land in the Cedar Swamp from the heirs of Nicholas Barlow. Under the ownership of Joseph Fleming, the operation became known as

Flemings Landing and was used as a port for the merchantile business he previously had operated in Smyrna. The land passed to his son Enoch Fleming, Sr. and then upon his death to his son Enoch Fleming, Jr. In 1861, the land was sold at a public auction ordered by the Orphan's Court to pay the debts of Enoch Fleming, Sr. The property was sold to Benjamin Nields for \$5525.00. It changed hands about every 20 years until 1927 when it was purchased by Samuel Fortner. The tract is now in the possession of his great-grandsons David and Ivison Rowland. The mansion farm tract has remained virtually the same acreage over the years and is still in agricultural production.

During the 19th century the settlement at Flemings Landing in proximity to the project area consisted of a single farm complex, the Fleming House, and its associated outbuildings (wharves and storehouses). A Kent County Mutual Insurance Company policy, dated 1857, lists a two storey frame dwelling (20 x 40 feet) with a back section (16 x 25 feet), a smoke house (11 x 13 feet), and a stabling (22 x 33 feet) (Kent County Mutual Insurance 1857). Based on the present configuration of extant structures and visible landscape features, it is likely that most of these buildings were located between the present building complex and the river. The 1868 Beers' Atlas of Delaware (Figure 5) shows the existence of a roadway continuing from the present lane and extending to the river and wharf. It is probable that the storehouse structures listed in the 1817 tax assessment flanked either side of the roadway leading to the river.

During the last decades of the 19th century, the settlement at the landing expanded greatly. A partial reason for the growth

at this time can be attributed to the construction of a bridge across the Smyrna River at Fleming's Landing. This created the only connection across the Smyrna River between the Town of Smyrna and the Delaware Bay. At this time, the tract of land east of Route 9 was subdivided into approximately three parcels. On the parcel bordering the River, the Brady Steamship Company purchased a 3 acre lot and by ca. 1890 had constructed a wharf and tomato cannery (Plate 1). To the east of the cannery, a series of 10 or 12 small one storey frame houses with individual wells were constructed in order to house the seasonal workers for the tomato cannery. At the height of production, the cannery employed approximately 50-60 workers with 30-35 of these seasonal employees. These structures were not extant by 1920, the date when the informant and his family moved to the above mentioned farmstead. Adjacent on the fast land side of this lot a small farm was created through a division and sale of the property to William Pleasanton. By the early 1920s, this farmstead consisted of a one and one-half storey frame structure with three rooms on the first floor and two rooms on the second floor, a large barn and granary, horse stable with wagon shed, corn crib, chickenhouse, meat house, and privy. At the time of the purchase of the property by the Gardner family, a frame addition off the back of the structure was created by moving the extant Pleasanton country store, at that time placed adjacent and parallel to Route 9, into a position north of and perpendicular to the main block. This two storey frame building thus created an ell off the rear of the main block and functioned to provide additional bedrooms for the family.

During the same time two structures were constructed on lots at the mouth of the lane leading to the Fleming House. The Nellie E. Johnson House (Plates 1, 3) and the Almus Akers House (Plates 1, 4) are both located to the northeast of the project area and will not be impacted by the proposed construction. The Almus Akers House was constructed in 1921 by the father of the informant, William Gardner. The lot and structure were then sold to Samuel Fortner, the owner of the Fleming House who utilized the house as a tenant house for workers under his employ. The exact date of construction of the Nellie E. Johnson House is not known. The structure is not present on Baist's 1893 Atlas but, based on architectural characteristics, was probably constructed in the first decades of the 20th century. It also appears to have been constructed as a tenant house for workers at the Flemings House.

Land subdivision into lots was also occurring in the late 19th - early 20th century to the west of the present day Route 9 with the creation of the lot for the operation of the Smith and Burkley Wharf/Warehouse (Plate 1). The history of this site will be outlined under the discussion of the archaeological investigation at the site.

Later in the 20th century, several additional lots were created within the settlement. An additional lot was created between the Akers House and the Pleasanton House (Plate 1). On the lot was constructed a structure designed to house the bridgetender for the Flemings Landing moveable bridge. By the second decade of the 20th century, the population density of Flemings Landing had reached an historic maximum.

PLATE 3
Nellie E. Johnson House



PLATE 4
Almus A. Akers House



Resource Potential

Prehistoric. The Flemings Landing project area on the north side of the Smyrna River has a moderate to high probability for prehistoric cultural resources. The project area's location along the main branch of the Smyrna River enhances its desirability as a prehistoric site locus because presence of surface water is the major factor in determining prehistoric site locations in the Delaware Coastal Plain (Custer, Eveleigh, Klemas, and Wells 1986; Eveleigh, Custer, and Klemas 1983). However, the absence of a stream confluence near the project area makes it unlikely that any large base camps will be found in the project area.

Historic - Terrestrial. The potential for historic site location within the proposed right-of-way is moderate. The close proximity of the project ROW to the Fleming House increases the probability for the location of historic resources. Adjacent to the Smyrna River water-related resources could be expected, also with a moderate probability. The disturbance due to plowing reduces the probability of the location of intact prehistoric and historic resources.

The Fleming House (N-153), a National Register site, is located on the north side of Duck Creek and to the west of Route 9 and outside of the project area (Figure 2, Plates 1, 5). The easternmost National Register site boundary line ranges from approximately 50 to 200 feet from the centerline of the proposed construction (Figure 7). No segment of the site will be impacted by the proposed construction. The Fleming House was built sometime in the early 1800s by Nicholas Barlow on what became his

PLATE 5
Fleming House (N-153)

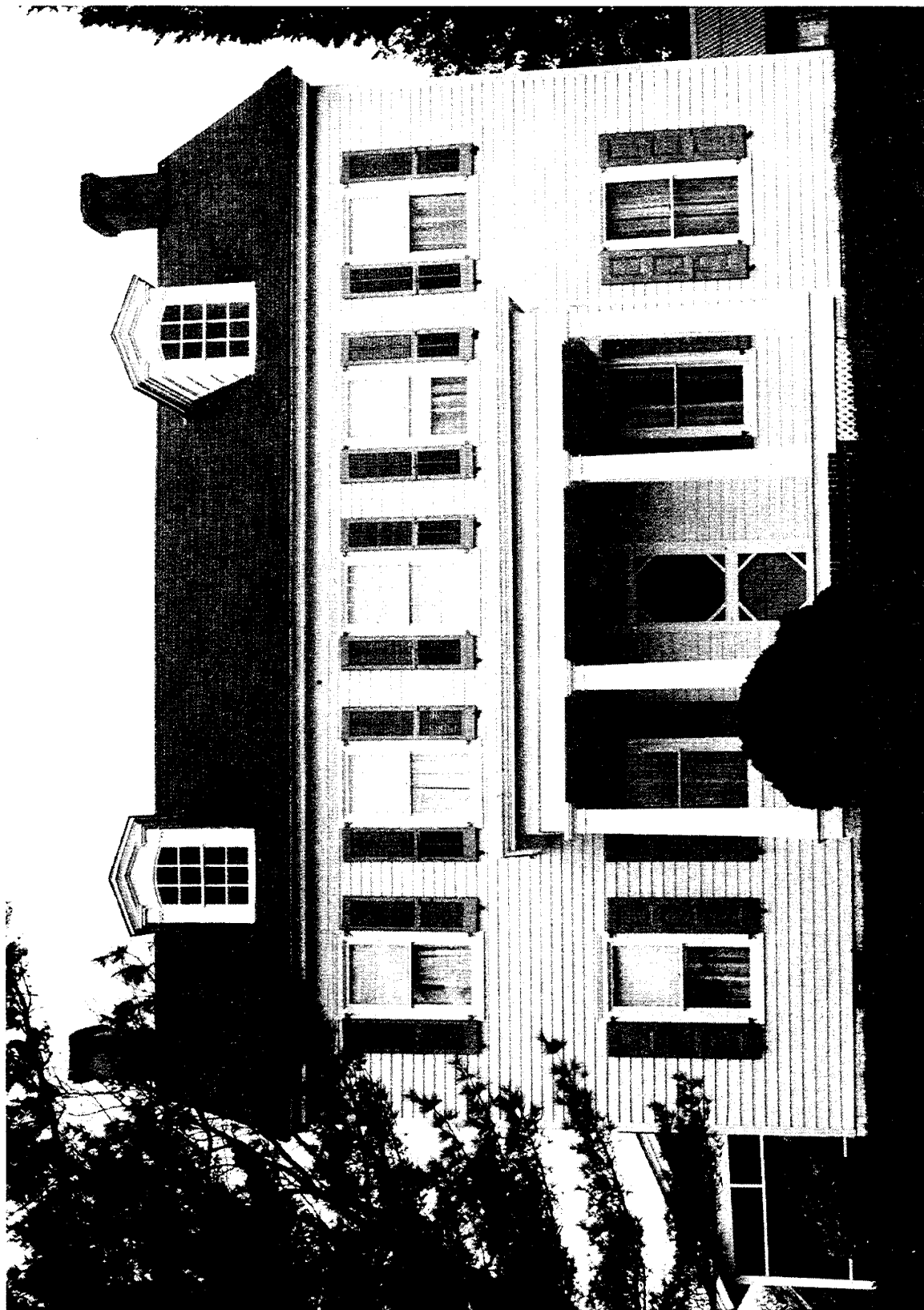
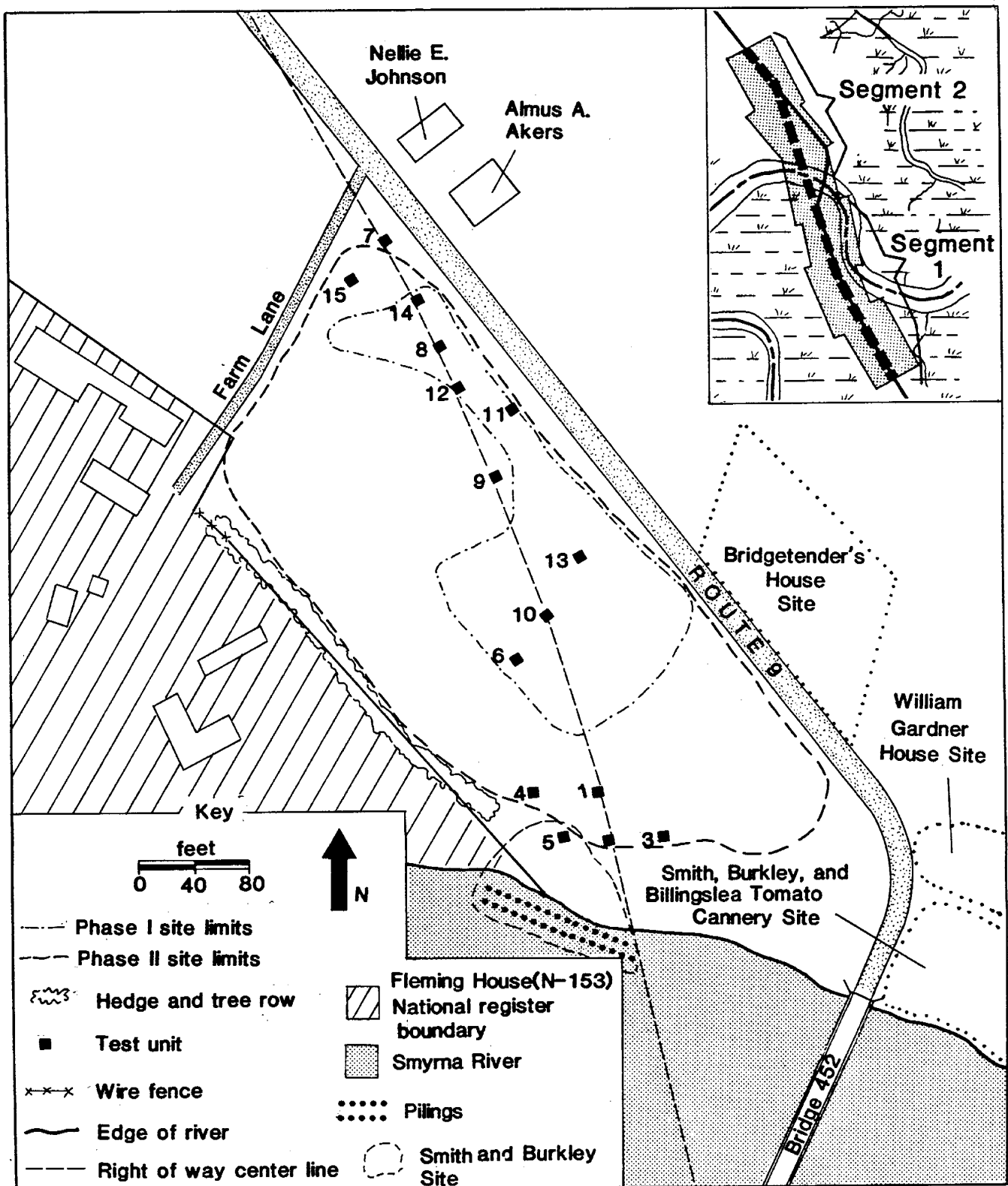


FIGURE 7

Site Boundaries and Test Unit Locations – 7NC-J-165



"mansion farm" tract. The house is a two-and-a-half storey sheathed clapboard frame structure, five bays across, with a two storey frame wing also covered with sheathed clapboard. Architecturally, the house represents the symmetry and central hall floor plan of the Greek Revival Style. The architectural elements of the house have been altered little since it was built. The house has a full basement under the main section and a foundation of brick and stone. There are six frame outbuildings associated with the house, a late 19th century garage, an early 20th century machine shed, a late 20th century outbuilding, a late Victorian horse barn, and a late Victorian barn connected to a large barn by a 20th century chickenhouse (Figure 7). The arrangement of the outbuildings associated with the main structure appears to consist of remnants of a court plan with more modern structures built closer to the house rather than replacing earlier buildings on or near their sites (Fleming House National Register Form, 1979). It also appears that another cluster of buildings was formerly located adjacent to the extant Fleming House wharf.

Based on research by Catts et al. (1988) of the Christiana Bridge area, landings played a most important economic function to the surrounding community, acting as nodal points as described by Hickman (1977). The poor overland network of 18th century Delaware and the Delmarva Peninsula made landings and water-oriented shipping critical to the lives of the regions' inhabitants. The importance of the landings to the economic health of the community can be surmised from advertisements in the Pennsylvania Gazette. An example of such an advertisement

appeared on February 18, 1768;

To be sold, 650 acres of land, on Duck Creek, New Castle County, at the confluence of Main Duck Creek, and the Northwest Branch, 7 miles from the river Delaware, and navigable for large vessels. There is a commodius landing on the premises, for transporting the county produce to Philadelphia, and is suitable for storekeeping and ship building.....

David Finney

An earlier advertisement dated November 15, 1750 states;

.....A very valuable plantation, situate on the north side of Murtherkiln Creek, containing about 350 acres land and marsh, with a very good navigable landing adjoining thereunto, is a fine place for trade to Philadelphia, or elsewhere.

It appears that the landing operation at Flemings Landing was similar to those located to the east of Christiana Bridge which were named for and owned by single individuals, i.e., Patterson's Landing, Read's Landing. These were small-scale operations and contained only a wharf and storehouse. Flemings Landing through much of the 19th century did not develop into a merchantile village such as Christiana Bridge with its concomitant growth of shops and other service-oriented operations. Instead, Flemings Landing was operated solely by the occupants of the Fleming House as a distribution and redistribution center for the surrounding community as a place where local farmers could bring their produce for shipment to regional markets. It is probable, also based on research by Catts et al. (1988), that at times partnerships, joint ventures, and other business agreements were formed between the landing owner and other merchants, shallopmen, and shopkeepers. It was

common for gentlemen and farmers to travel to Philadelphia in order to purchase goods and to contract shallops to deliver the goods to local landings (Munroe 1954). The constant shallop traffic also provided convenient, if somewhat uncertain passenger service from Kent and Sussex counties to Wilmington and Philadelphia. This was an important service in these areas and many of the lower Delaware landings were placed long distances up the drainages in order to facilitate passengers. Duck Creek, on which Flemings Landing was located, was navigable by shallops for approximately 20 miles inland (Munroe and Dann 1985). There existed during the 19th century eight or nine landings along this 20 mile distance. Except for Smyrna Landing, all were small owner-operated businesses serving only the surrounding landowners (farmers).

Historic - Underwater. Knowledge of the potential for location of underwater cultural resources within the project area were gained from U. S. Army Corps of Engineers records and informant information. Within the local area, dredging of a channel through the northern end of Bombay Hook Island in the early 1740s represents the first in a series of projects designed to improve inland water transportation. The 'Throughfare' was the name given to this mile channel which was completed through the efforts of local farmers seeking to improve their access to regional markets.

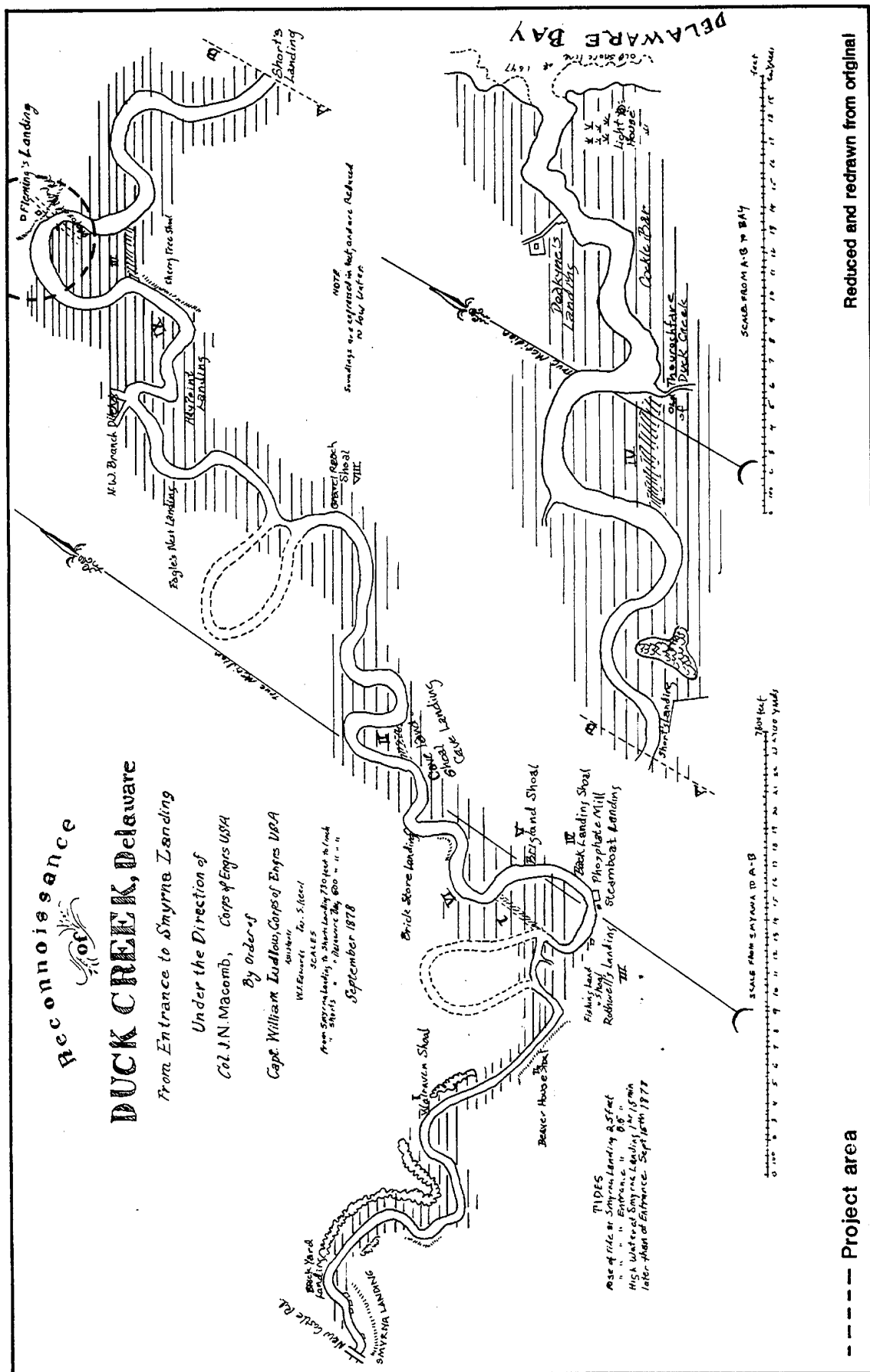
Within the project area, channel modification began as early as 1810 when a tax assessment was made in order to embank and drain the Northwest Branch of Duck Creek in order to erect banking and sluices, drains, and canals. It is probable that by

this date the main branch of Duck Creek had also been stabilized and banked.

Based on Army Corps of Engineer records, only small scale channel work was carried out on Duck Creek until the late 19th century. During 1870-1878, several transporting companies and private citizens had expended approximately \$6500 in dredging and making cut-offs between Smyrna and Flemings Landing. In its original condition, Duck Creek was obstructed by a bar at its entrance, having but 3' draught at low water. Between the mouth and Smyrna, the head of navigation, there existed nine shoals creating a minimum depth of 2.5'. The first project to improve navigation was initiated in 1878, at which time was made a complete survey of Duck Creek from its mouth to Smyrna Landing (Annual Reports, War Department 1910:251) (Figure 8). This project called for deepening the channel at the entrance across shoal, creating a 100' long channel, eight feet in depth and between the mouth and Smyrna Landing to remove all shoals and provide for a 40' wide channel to a depth of 6' at mean low water. Based on reports in following years, the dredging of the channel mouth was not successful as it was filled in within one year of the completion of the project. Approximately \$10,000 was spent on this project. The second project to affect the channel of Duck Creek was initiated under the River and Harbor Act of 1888 and called for a channel 7' in depth throughout with a width of 60' in the river and 100' at the mouth (Annual Reports, War Department 1910:251). The project acted to produce a channel 40' wide, 6 1/2 feet deep at low water through dredging from Smyrna Landing to Brick Store Landing, a distance of 3 miles. The

FIGURE 8

Reconnaissance of Duck Creek, Delaware from Entrance to Smyrna Landing - September, 1878



excavated material was deposited on the banks of the stream. A summary of the survey states that "No further difficulty is met for the next 3 miles, when we arrive at Flemings Landing, a very important shipping point. A pivot draw bridge crosses the creek here, with two openings of about 35 feet each. This iron bridge is in good working order and is not regarded as an obstruction to navigation. Based on the 1887 report, "five schooners of 30-80 tons, several barges of 100-200 tons and one 200 ton screw steamer navigate the creek regularly at high water as far up as Rothwells Landing with a draught of 6 1/2 feet" (Annual Reports, Chief of Engineers 1887:848). The amount of commerce was estimated between \$2,000,000 and \$3,000,000 per annum, consisting of fruit, grain, truck, timber, fertilizer, coal, iron, agricultural implements, tile, brick, lumber, stock, and general merchandise. Further channel modification was initiated through the River and Harbor Act of 1905 (Annual Reports, War Department 1910:251). This act sought to provide for a channel 7' deep at mean low water, 100' wide at the bar and 60' wide thence to Smyrna, a distance of 10 miles. Dredging completed in 1910 between Smyrna Landing and Cherry Tree Reach, a distance of 5 1/2 miles, created a continuous channel not less than 50' wide and 6' deep from Smyrna Landing to the mouth (Annual Reports, War Department 1910:1305). Again the dredged materials were deposited upon the adjacent banks above the high water line. Based on a 1920 survey, there existed eight wharves on the river, beside individual farm landings (Annual Reports, Chief of Engineers 1920:461). At Flemings Landing were located the Smith and Burkley and Billingslea wharves on which were located a

canning factory and 2 warehouses and the Donovan wharf on which was located a large warehouse. The Donovan Wharf was later sold to Smith and Burkley.

The current channel structure of Duck Creek within the project area places the north bank of the creek on the outside of the meander bend of the river. In this position, the bank is highly subjected to bank erosion through tidal-induced current action. There is present within this northern bank an almost vertical profile based on topographical information. Contemporary observation of current conditions supports the high energy conditions along the north bank of the river channel. Recent diving expeditions have confirmed both the depth of the channel (estimated depth up to 40') and also the extremely strong current action within the project area.

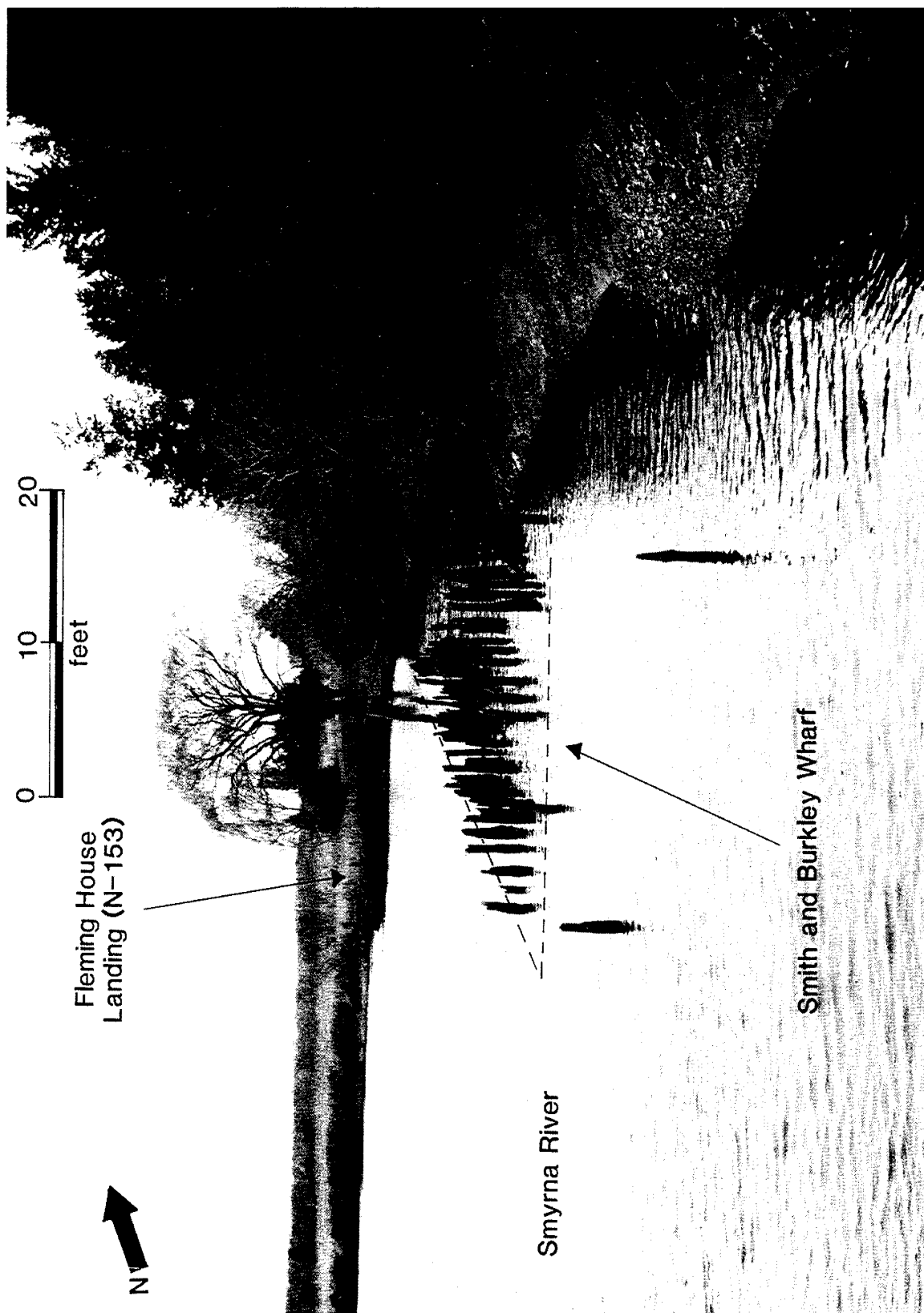
Based on the available archival information, the potential for the presence of significant underwater cultural resources is low. It is more probable that any underwater resources associated with Flemings Landing would be more likely out of the proposed ROW, adjacent to the Fleming House wharf (Plate 6). This is because: 1) this wharf saw the bulk of the 19th century traffic; 2) because of the presence of the wharf structure, the area probably was impacted less by the dredging carried out in this area; and 3) present day current and channel erosion in this area is much less than that downstream.

Results of Field Investigations

The majority of the proposed ROW within this segment consists of a plowed field currently under cultivation. The southern section of the segment contains a narrow strip of brush

PLATE 6

Smith and Burkley Wharf, Looking Northwest



and trees bordering the Smyrna River. Phase I field reconnaissance survey in Segment 1 resulted in discovery of two archaeological sites, one with purely historic materials, and one site with both historic and prehistoric materials.

Smith and Burkley Wharf/Warehouse Site. This site was located by Phase I reconnaissance and consists of the remnants of a wharf on whose western section a small warehouse was located. The present day condition of the site is poor and only the piers from the wharf are present adjacent to the north bank of the Smyrna River (Plate 6).

Background research indicated the presence of this operation in this location beginning ca. 1900. At this time, a small parcel of land was purchased from William Coning who at the time owned the Fleming House farm. Based on informant interviews, Smith and Burkley shipped locally grown produce, mainly tomatoes, to points along the Delaware River from the wharf. Besides the wharf/warehouse, a small frame structure which functioned as a weighing station, and a well were present on the parcel early in the 20th century. By 1920, the business had grown considerably and was moved to the east side of the main road where a large tomato cannery and wharf were in operation. This cannery, first owned by the Brady Steamship Company, was sold in 1920 to Smith, Burkley, and Billingslea, and in the early 1930s to Norman E. Warean. The cannery ceased operation in the mid-1930s. The cannery building was moved to Dover in the late 1940s to serve as the main building of Spence's Bazaar (Plate 7). During this period, structures on the west side of the road were abandoned and gradually fell into disrepair. Aerial photographs of the

PLATE 7

Spence's Bazaar

(former Smith, Burkley, and Billingslea Tomato Cannery)



area dated to 1937 show the presence of a dirt road running from Route 9 along the north bank of the Smyrna River to the vicinity of a wharf present on the river. Situated on the western end of the wharf is a frame structure which covers approximately one-half of the wharf's surface. Located approximately 25 feet to the northeast of the wharf is another very small frame structure, the weighing station. By the time of the 1954 aerial photograph, the structures are no longer present, the dirt road is overgrown and the pier system had assumed its modern appearance.

Phase I surface reconnaissance and archaeological testing was carried out in the area of the weighing station (Figure 9). Artifacts recovered consisted exclusively of various unidentified metal fragments within a very thin humus horizon. (Appendix I contains an inventory of all artifacts recovered.) No features were located. The site is not considered to be eligible for listing on the National Register under any criteria and no further work is recommended at the site.

Flemings Landing Site (7NC-J-165, N-8849). A 1983 surface reconnaissance by the staff of the Delaware Bureau of Archaeology and Historic Preservation had identified this site in the cultivated field on the north side of the Smyrna River between the Fleming House and Delaware Route 9 (Plate 8). No information on diagnostic artifacts is available in the state files. Further surface reconnaissance in 1985 recovered a variety of historic and prehistoric artifacts including an undiagnostic biface fragment, debitage, fire-cracked rock, mid-late 19th century ceramic and glass fragments, brick, coal, and oyster shell fragments. Investigations of the site by UDCAR consisted of two

FIGURE 9

Test Excavations at the Smith and Burkley Weigh Station

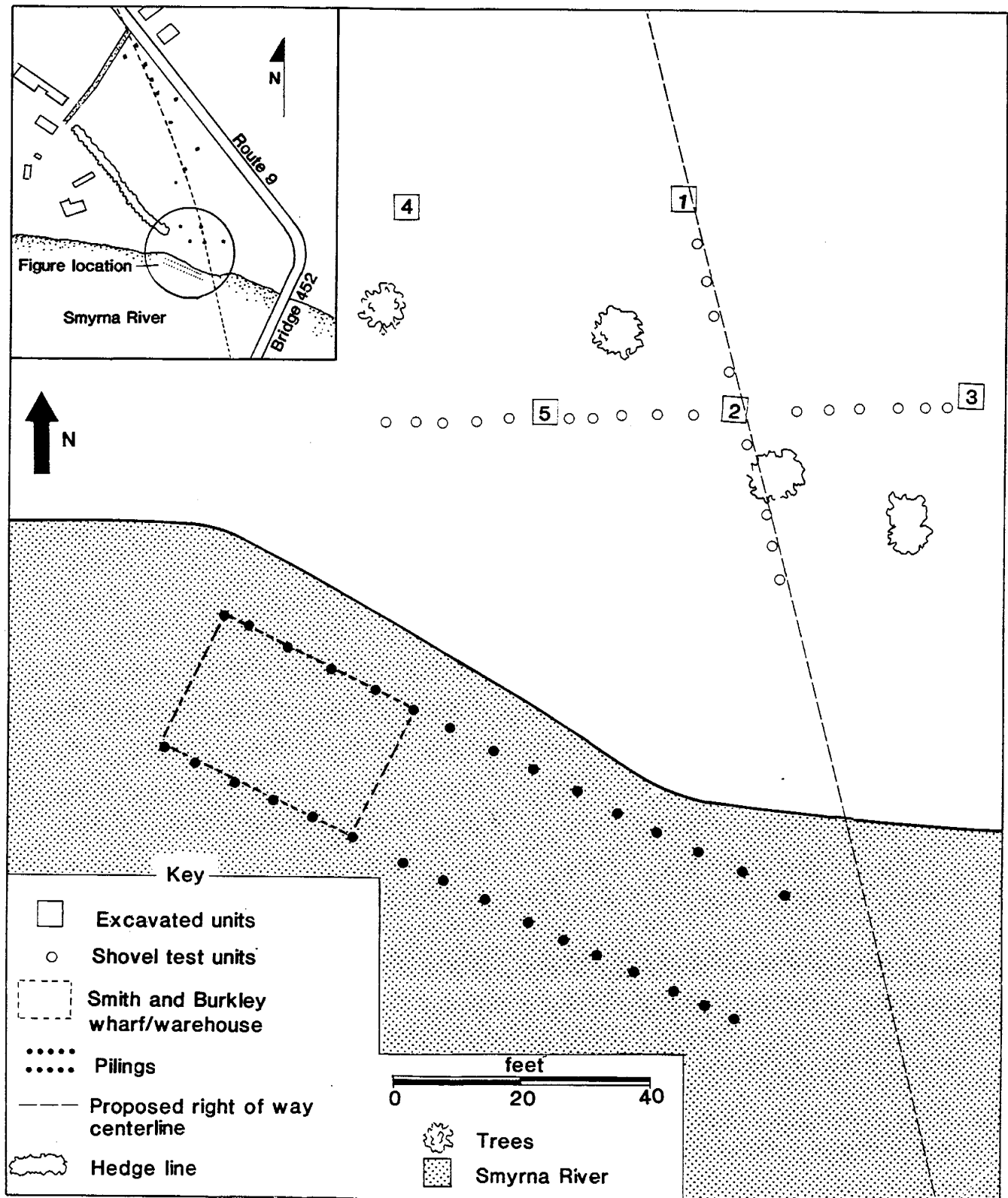
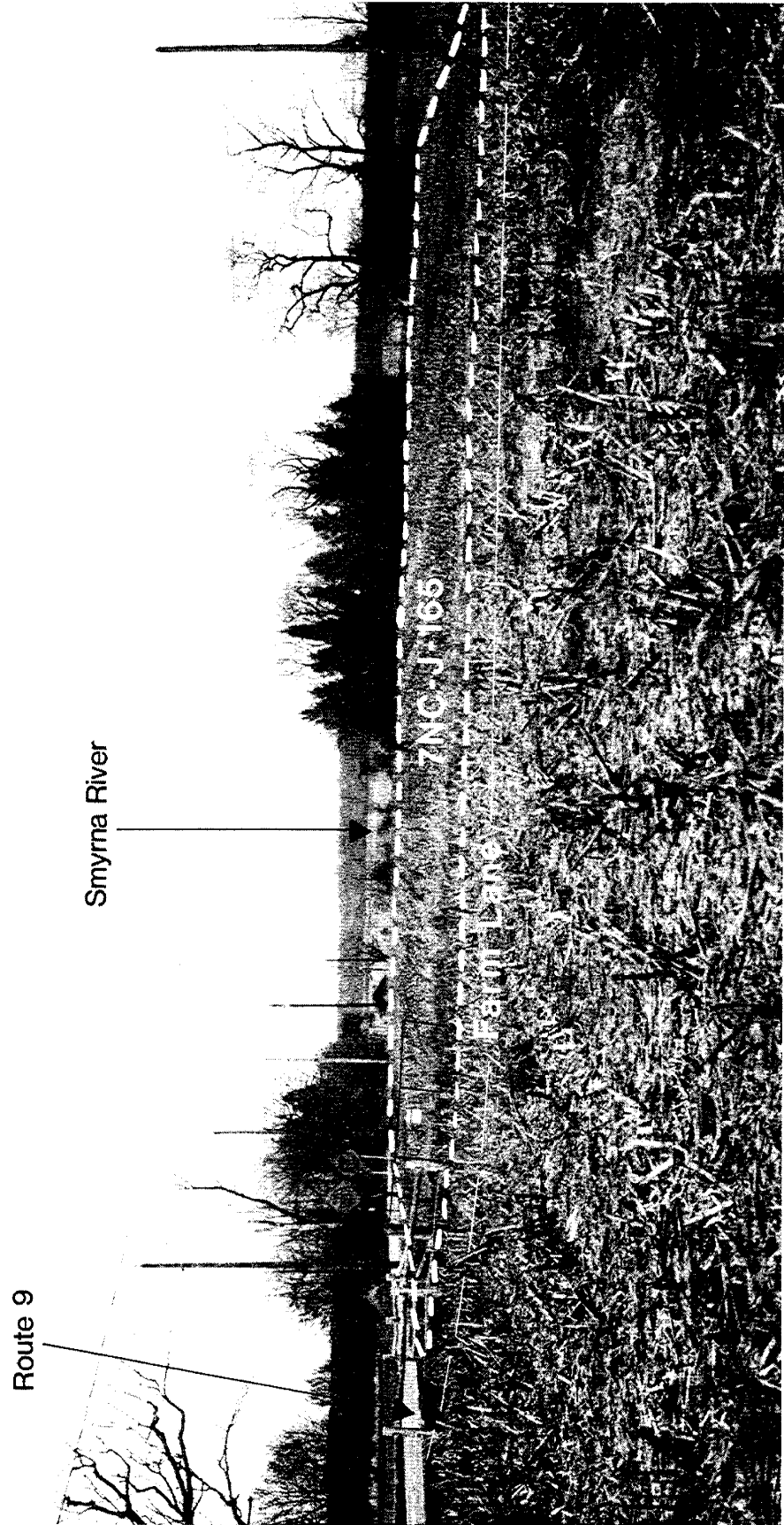
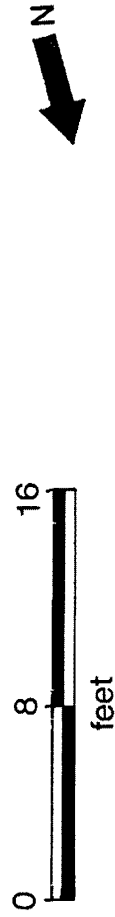


PLATE 8
Flemings Landing Site, Looking South



separate controlled surface collections with excellent surface visibility and excavation of a series of 15 1-meter squares. Figure 7 shows the site boundaries and the location of the test units.

In all cases, artifacts from the test units were recovered from disturbed plowzone and surface soil contexts. Figure 10 shows a profile of Test Unit 6 and is typical of test units within the cultivated field. The plowzone overlies Pleistocene deposits and in some cases gravels are present in both plowzone and subsoil contexts. The presence of these deposits near the surface indicates that severe erosion had taken place. The test units on the edge of the cultivated field, especially Test Unit Nos. 1 and 4, showed very thick plowzones (Figure 11) and these thick plowzone deposits are probably the result of the previously mentioned erosion. The high degree of erosion at the site precludes the possibility of finding any intact and undisturbed artifacts. Even in areas where eroded soils had been redeposited, no artifacts were found in undisturbed contexts and recent slope wash deposits were underlain by Pleistocene deposits. Oral interviews with local residents also indicated that the site area had been used as a stock pen and this land usage most likely increased the degree of site disturbance.

Appendix I contains a complete inventory of the artifacts recovered from the surface collections and the subsurface testing. The limited range of historic artifacts is indicative of field scatter from mid-late 19th century cultivation and manuring activities; however, it is possible that some of the historic artifacts could have been derived from sheet middens,

FIGURE 10

Flemings Landing, Test Unit 6,
North Wall Profile

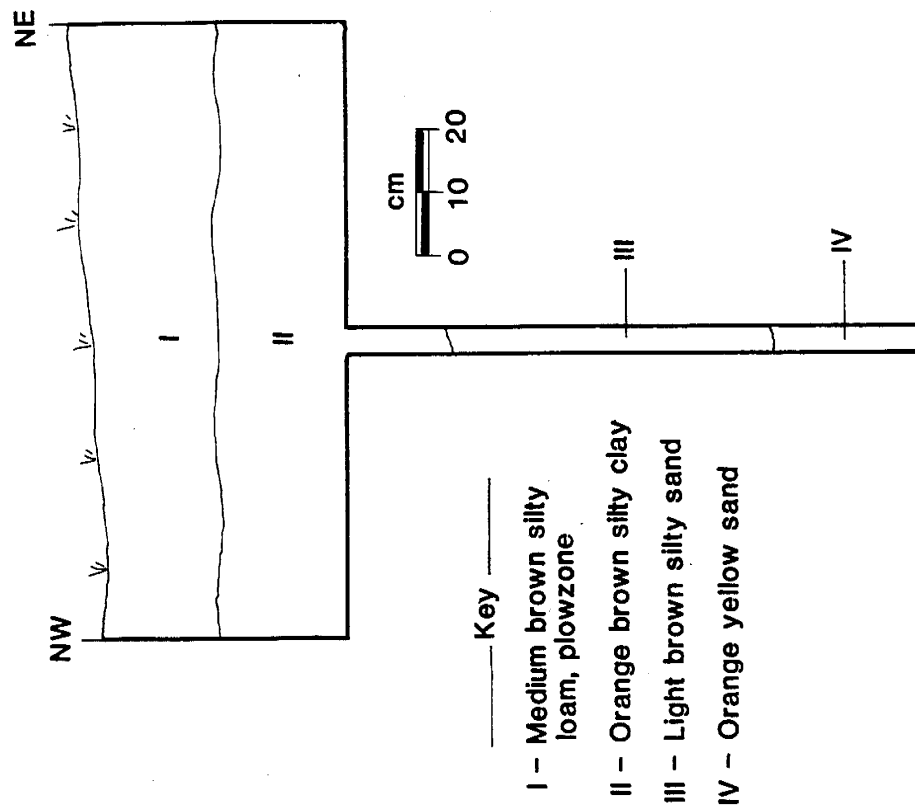
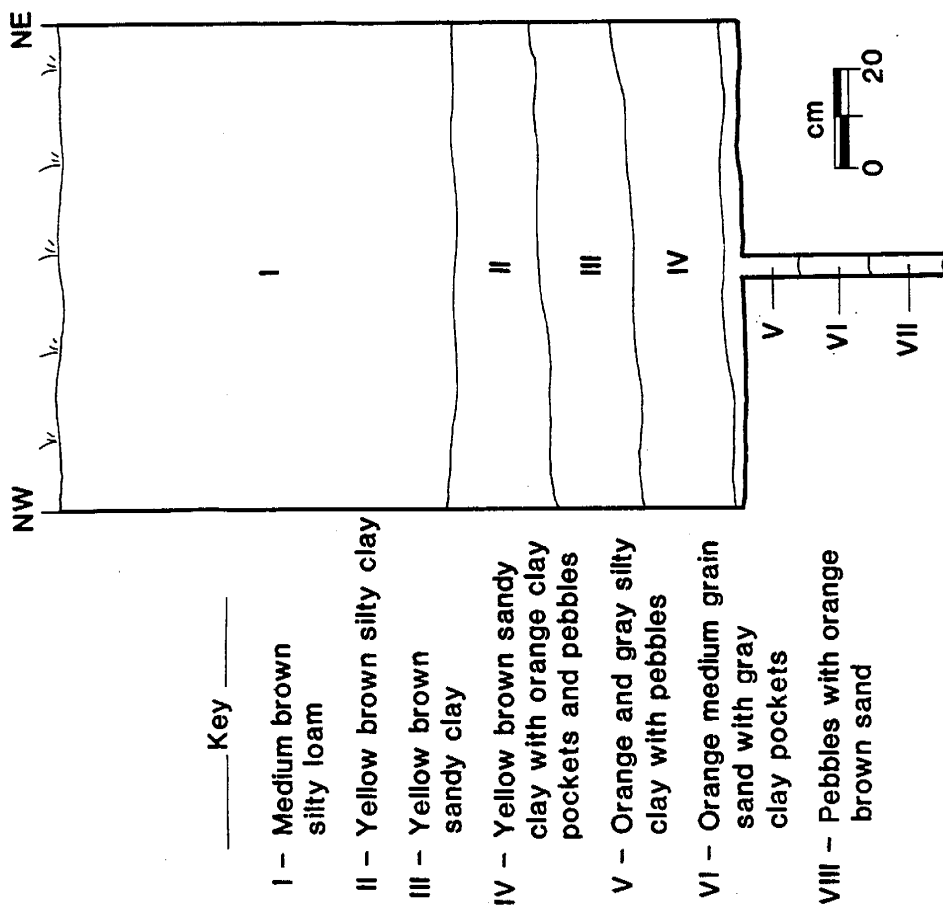


FIGURE 11

Flemings Landing, Test Unit 1,
North Wall Profile



especially in the portions of the site closest to the Flemings Landing house where the artifact concentrations are highest (Figure 12). Nonetheless, cultivation and the extensive erosion at the site has extensively disturbed the context of these artifacts.

Table 2 shows a composite summary catalogue of all prehistoric artifacts recovered from studies at 7NC-J-165. Figure 13 shows the distribution of prehistoric artifacts at the site, and there is no apparent pattern to the distribution. This absence of patterning is due to the disturbance of the site by cultivation and erosion. The artifact assemblage itself contains mainly debitage. Quartz is the most numerous lithic raw material in the assemblage followed by jasper, chert, quartzite, chalcedony, rhyolite, and argillite in order of decreasing frequency. Artifacts with cortex comprise 36% of the total lithic assemblage indicating that reduction of local cobble resources was a major activity at the site. The frequencies of lithic raw materials within the assemblage are also consistent with use of local cobble resources. The only definite non-local lithic materials are the rhyolite flakes and ironstone biface which comprise less than one-half of one percent of the total assemblage.

Nine bifaces, four of which are early stage rejects and five of which are late stage rejects are included in the assemblage. Two examples, A and B in Plate 9, show rejection in the late stage of manufacture, or use. All of these bifaces were broken during manufacture and their presence indicates that biface production from local cobbles was an important activity at the

FIGURE 12
Historic Artifact Distribution – 7NC-J-165

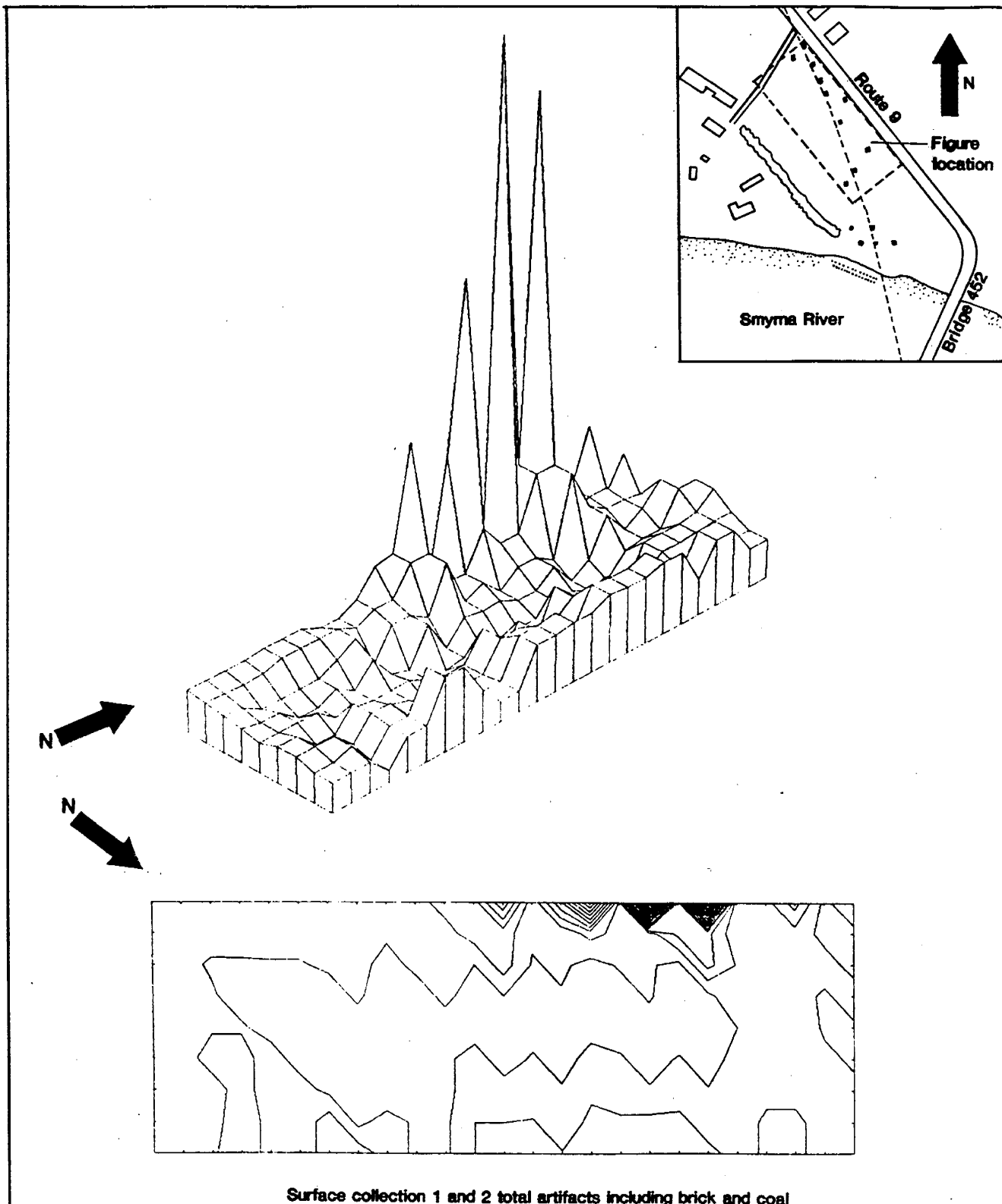


TABLE 2

COMPOSITE SUMMARY CATALOGUE - 7NC-J-165

	Quartzite	Quartz	Chert	Jasper	Rhyolite	Ironstone	Chalcedony	Total
Flakes (cortex)	33(11)	183(49)	117(34)	187(72)	3	---	3(1)	526(167)
Utilized Flakes (cortex)	---	1(1)	---	2	---	---	---	3(1)
Woodland I Points	1	1	---	1	---	---	---	3
Woodland II Points	---	---	3	1	---	---	---	4
Early Stage Biface Rejects	---	4(1)	---	---	---	---	---	4(1)
Late Stage Biface Rejects	---	2	1	1(1)	---	1	---	5(1)
Biface Frags. (cortex)	---	10	3	4(1)	---	---	---	17(1)
Shatter (cortex)	4(4)	106(30)	2	---	---	---	---	112(34)
Cores (cortex)	5(5)	44(40)	15(14)	1(1)	---	---	---	65(60)
Total	43(20)	351(121)	141(48)	197(75)	3	1	3(1)	739(265)

210 Fragments of Fire-cracked Rock

1 Gorget Fragment

7 Minguannan/Killens Ceramic Body Sherds

FIGURE 13

Prehistoric Artifact Distribution – 7NC-J-165

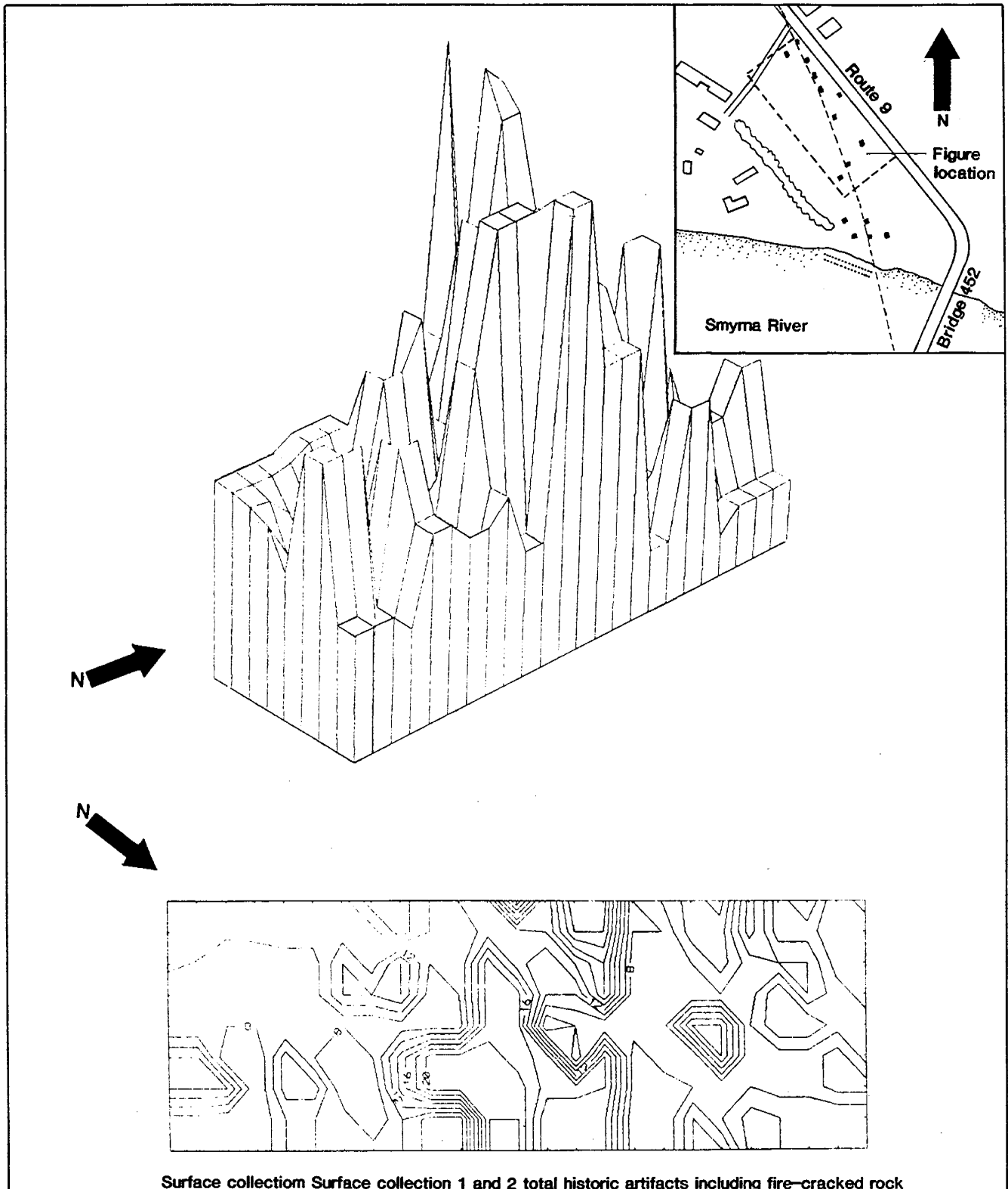
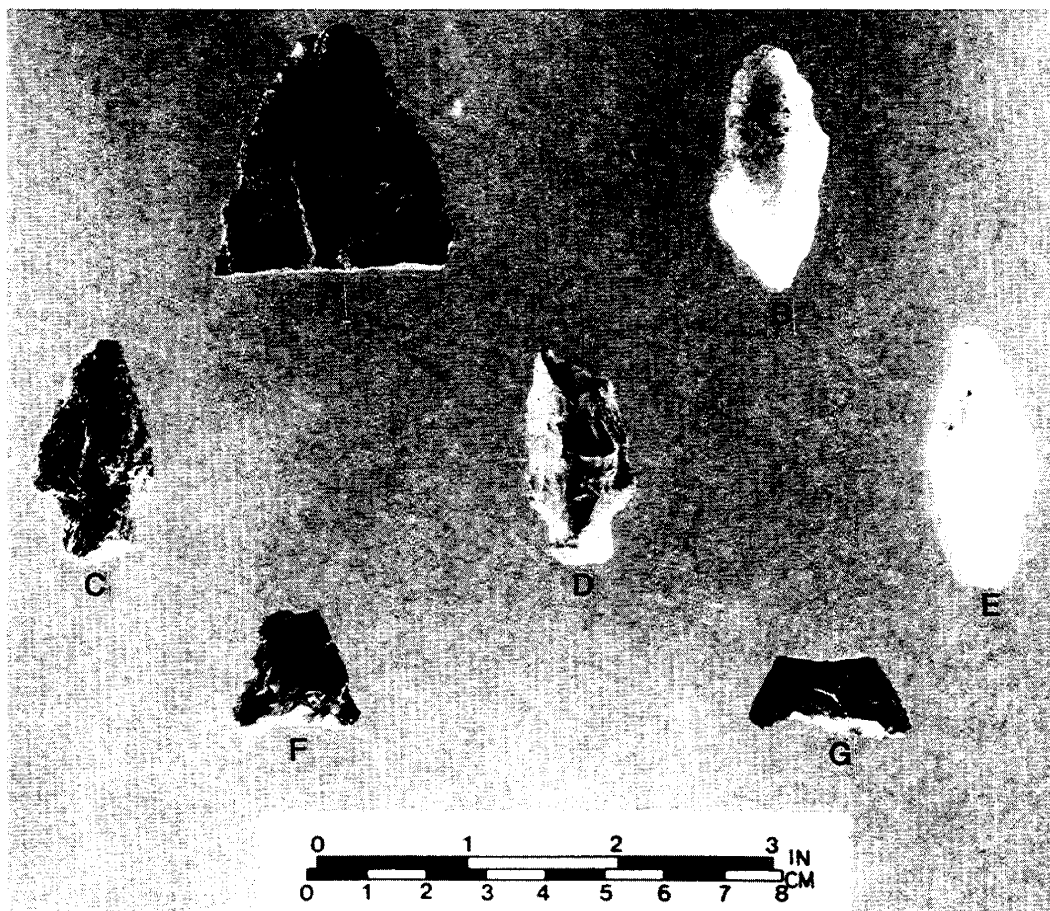


PLATE 9

Prehistoric Artifacts from Phase I/II Investigation at the Flemings Landing Site (7NC-J-165)



A – Ironstone biface fragment

B – Quartz late stage biface reject

C – Quartzite stemmed point

D – Jasper stemmed point

E – Quartz stemmed point

F – Chert triangular point

G – Chert triangular point

site. The cores (65) found at the site, which comprise 8% of the total assemblage, indicate that production of flakes for tools also took place at the site.

Diagnostic artifacts from the site include 7 projectile points and 7 ceramic sherds. A sample of the projectile points is shown in Plate 9. Three Woodland I stemmed points (Plate 9, Examples C, D, and E) were found indicating a site occupation between 3000 B.C. and A.D. 1000. Triangular points from the site (Plate 9, Examples F and G) indicate a Woodland II occupation ca. A.D. 1000 to A.D. 1600. The ceramics from the site all date to the Woodland II Period and are tempered primarily with grit, although some shell temper is present. The presence of shell temper indicates that these ceramics would be classified within the Killens category, a late prehistoric ceramic variety newly defined for central Delaware (Custer n.d.; Custer, Bachman, and Grettler 1986:191-192). In sum, the occupation of 7NC-J-165 cannot be specifically dated except to say that prehistoric occupations occurred at least once after 3000 B.C. and at least once after A.D. 1000.

Some further insights about the occupation of 7NC-J-165 can be gained by comparing the site's assemblage with those of other sites. A superficial comparison of 7NC-J-165 with other sites in the High Coastal Plain of northern New Castle County suggests that it might be a base camp. Site 7NC-J-165 contains indications of all stages of biface reduction and extensive core reduction for the manufacture of flake tools. This combination of lithic reduction activities is common of Woodland I and II base camps, such as at the Delaware Park site (Thomas 1981), the

Clyde Farm site (Custer 1982), the Green Valley site complex (Custer, Sprinkle, Flora, and Stiner 1981), and Site 7NC-E-42 (Custer and Watson 1985). On the other hand, the complete biface reduction sequence is not well represented at smaller and more ephemerally utilized, hunting camps such as the Hawthorn site (Custer and Bachman 1984). Therefore, 7NC-J-165 is thought to represent some kind of base camp site during its Woodland I and II occupations.

A more detailed comparison of the artifact assemblage from 7NC-J-165 with other site assemblages allows a closer determination of site function. Analysis of biface reduction and cobble reduction at base camp sites in northern New Castle County indicates that the most intensive cobble reduction took place at specialized micro-band base camps, not at the large macro-band base camps (Custer 1982:29-32). The cortex percentage for the 7NC-J-165 assemblage is 36% and this high value is more typical of the specialized cobble reduction sites of the Green Valley site complex (Custer 1982:31, Table 12; Custer, Sprinkle, Flora, and Stiner 1981). Based on these data and comparisons, it is suggested that 7NC-J-165 was a micro-band base camp where local cobble reduction for biface and flake tool production took place during Woodland I and Woodland II occupations.

CONCLUSIONS

Phase I and II archaeological investigations of the Flemings Landing bridge replacement project area identified one archaeological site, 7NC-J-165, which is categorized as a Woodland I/II micro-band base camp. The site also contains a

minor scatter of mid-late 19th century historic artifacts. However, the site has been badly disturbed by erosion, cultivation, and livestock penning activities. The site is not eligible for the National Register and no further work is recommended.

REFERENCES CITED

- Annual Reports. U.S. Army Chief of Engineers
1910 Report of the Chief of Engineers, U.S. Army.
Government Printing Office, Washington.
- 1920 Report of the Chief of Engineers, U.S. Army.
Government Printing Office, Washington.
- Ball, Diane E.
1976 Dynamics of Population and Wealth in Eighteenth Century
Chester County, Pennsylvania. Journal of Interdisci-
plinary History 6(4):621-644.
- Bausman, R. O.
1933 The Economic and Historic Background of Farm Tenancy in
Delaware. Journal of Farm Economics 15(1):164-167.
- Braun, E. L.
1967 Deciduous Forests of Eastern North America. Hafner,
New York.
- Catts, Wade P., Jay Hodny and Jay F. Custer
1988 "The Place at Christeen": Intensive Archaeological
Investigations of the Patterson Lane Site Complex,
Christiana, New Castle County, Delaware. Delaware
Department of Transportation Archaeology Series (in
press). Dover.
- Coleman, Ellis C., Kevin W. Cunningham, Wade P. Catts, and Jay F.
Custer
1984 Phase III Data Recovery Excavations of the William M.
Hawthorn Site, 7NC-E-46, New Churchman's Road,
Christiana, New Castle County, Delaware. Delaware
Department of Transportation Archaeology Series No. 28.
Dover.
- Coleman, Ellis C., Kevin W. Cunningham, Wade P. Catts and Jay F.
Custer
1985 Intensive Archaeological Investigations of the Wilson-
Slack Argicultural Works Complex, Chestnut Hill Road-
Route 4, Newark, New Castle County, Delaware. Delaware
Department of Transportation Archaeology Series 34.
Dover, DE.
- Conrad, Henry C.
1908 History of the State of Delaware. 3 vols. Henry C.
Conrad, Wilmington.
- Custer, J. F.
n.d. Prehistoric Cultures of the Delmarva Peninsula: An
Archaeological Study. University of Delaware Press,
Newark (in press).

- Custer, J. F.
1982 The Prehistoric Archaeology of the Churchman's Marsh Vicinity: An Introductory Analysis. *Bulletin of the Archaeological Society of Delaware* 13:1-41.
- Custer, J. F.
1984 *Delaware Prehistoric Archaeology: An Ecological Approach*. University of Delaware Press, Newark.
- Custer, J. F.
1986 A Management Plan for the Prehistoric Archaeological Resources of Delaware's Atlantic Coast. University of Delaware Center for Archaeological Research Monograph, (No. 5). Newark.
- Custer, J. F., and David C. Bachman
1984 Phase III Data Recovery Excavations of the Prehistoric Components from the Hawthorn Site 7NC-E-46, Christiana, New Castle County, DE. Delaware Department of Transportation Archaeology Series 27. Dover, DE.
- Custer, J. F., D. C. Bachman and D. J. Grettler
1986 An Archaeological Planning Survey of Selected Portions of the Proposed Route 13 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series No. 45. Dover, Delaware.
- Custer, J. F. and Colleen De Santis
1986 A Management Plan for the Prehistoric Archaeological Resources of Northern Delaware. University of Delaware Center for Archaeological Research Monograph 5.
- Custer, J. F., T. Eveleigh, V. Klemas, and I. Wells
1986 Application of LANDSAT Data and Synoptic Remote Sensing to Predictive Models for Prehistoric Archaeological Sites: An Example from the Delaware Coastal Plain. *American Antiquity* 51:572-588.
- Custer, J. F., J. H. Sprinkle, A. H. Flora, and M. C. Stiner
1981 The Green Valley Site Complex: Lithic Reduction Base Camp Sites on the Delaware Fall Line. *Bulletin of the Archaeological Society of Delaware* 12.
- Custer, J. F., and E. B. Wallace
1982 Patterns of Resource Distribution and Archaeological Settlement Patterns in the Piedmont Uplands of the Middle Atlantic Region. *North American Archaeologist* 3(2): 139-172.
- Custer, J. F., and S. C. Watson
1985 Archaeological Investigations at 7NC-E-42, A Contact Period Site in New Castle County, Delaware. *Journal of Middle Atlantic Archaeology* 1:97-115.

- Egnal, Marc
 1975 The Economic Development of the Thirteen Continental Colonies, 1720-1775. *William and Mary Quarterly* 32(2):191-222.
- Eveleigh, T., J. F. Custer, and V. Klemas
 1983 LANDSAT-generated Predictive Models for Prehistoric Archaeological Site Locations on Delaware's Coastal Plain. *Bulletin of the Archaeological Society of Delaware* 14:19-40.
- Gardner, W. M.
 1978 Comparison of Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain Archaic Period Site Distribution: An Idealized Transect (Preliminary Model). Paper presented at the 1978 Middle Atlantic Archaeological Conference, Rehoboth Beach, Delaware.
- Hancock, Harold
 1947 Agriculture in Delaware, 1789-1900. In *Delaware: A History of the First State*, vol. 1, edited by H. Clay Reed, pp. 373-389. Lewis Historical, New York.
- Hickman, Patricia P.
 1977 Country Nodes: An Anthropological Evaluation of William Keys' Desert Queen Ranch, Joshua Tree National Monument, California. *Publications in Anthropology* No. 7. Western Archaeological Center, Tucson, Arizona.
- Hoffecker, Carol E.
 1977 *Delaware: A Bicentennial History*. W. W. Norton and Company, New York.
- Jordan, R. R.
 1964 Columbia (Pleistocene) Sediments of Delaware. *Delaware Geological Survey Bulletin* No. 12, Newark.
- Kraft, J. C., E. A. Allen, D. F. Balknap, C. J. John, and E. M. Maurmeyer
 1976 Delaware's Changing Shoreline. *Technical Report*, Delaware Coastal Zone Management Program No. 1, Newark.
- Laws of the State of Delaware
 1797 *Laws of the State of Delaware*. Vols. I and II. Samuel and John Adams, New Castle, Delaware.
- Lemon, James T.
 1967 Urbanization and the Development of 18th Century South Eastern Pennsylvania and Adjacent Delaware. *William and Mary Quarterly* 24(4):501-542.
- 1972 *The Best Poor Man's Country: A Geographical Study of Early Southeastern Pennsylvania*. Johns Hopkins, Baltimore.

- Lindstrom, Diane
1978 Economic Development in the Philadelphia Region, 1810-1850. Columbia University, New York.
- Lindstrom, Diane
1979 American Economic Growth before 1840: New Evidence and New Directions. The Journal of Economic History 39(1):289-301.
- Munroe, John A.
1954 Federalist Delaware, 1775-1815. Rutgers University, New Brunswick.
- Munroe, John A.
1978 Colonial Delaware: A History. KTO Press, Millwood, N.Y.
- Munroe, John A. and John C. Dann
1985 Benjamin Eastburn, Thomas Noxon, and the Earliest Maps of the Lower Counties. Delaware History 21(4):217-232.
- Pennsylvania Archives
1891 Land Warrants for New Castle, Kent and Sussex Counties, ca. 1735. Pennsylvania Archives 7(1891):193-204.
- Pursell, Carroll W.
1958 That Never Failing Stream: A History of Milling on Red Clay Creek during the Nineteenth Century. Master's thesis, University of Delaware.
- Spoljaric, N.
1967 Pleistocene Channels of New Castle County. Delaware Geological Survey Report of Investigations No. 10. Delaware Geological Survey, Newark.
- Thomas, R. A.
1976 A Re-evaluation of the St. Jones River Site. Archaeology of Eastern North America 4:89-110.
- Thomas, R. A.
1981 Excavations at the Delaware Park Site (7NC-E-41). Delaware Department of Transportation Archaeology Series No. 11. Dover.
- U.S. Congress. House.
1887 Report of the Chief of Engineers, U.S. Army, River and Harbor Improvements. 50th congress, 1st session, House Executive Document 1, 2534.
- Walzer, John F.
1972 Colonial Philadelphia and Its Back Country. Winterthur Portfolio 7:161-173.

MAP SOURCES CONSULTED

Map of New Castle County, Delaware from Original Surveys. Samuel Rea and Jacob Price. Smith and Wister, Philadelphia, 1849.

Atlas of the State of Delaware. Pomeroy and Beers, Philadelphia, 1868.

Atlas of the State of Delaware. G. William Baist, Philadelphia, 1893.

NEWSPAPERS CONSULTED

Pennsylvania Gazette

MANUSCRIPT SOURCES CONSULTED

Delaware State Archives

New Castle County Orphans Court Records, record group 2840

New Castle County Deeds, record group 2555

New Castle County Levy Court, record group 2200

Road Petitions and Returns

New Castle County Tax Assessments, record group 2535

Kent County Mutual Insurance Loose Manuscripts Policy #697-698

PERSONNEL

Jay F. Custer, Principal Investigator, Director, University of Delaware Center for Archaeological Research, Associate Professor of Anthropology. B.A. in Anthropology, Franklin and Marshall College. M.A., Ph.D. in Anthropology, Catholic University of America. Fifteen years experience in archaeological research in the Middle Atlantic.

Ellis C. Coleman, Project Manager
B.A. in Geology/Anthropology, Washington and Lee University;
M.A. in Anthropology/Archaeology, University of Georgia.
Nine years experience in historic and prehistoric archaeological research in Virginia, Washington, D.C., Georgia, Missouri, New Mexico, Delaware, and France.

Angela Hoseth, Crew Chief
B.A. in Anthropology, B.S. in Geography, University of North Dakota. Six years experience in research in Middle Atlantic and Plains archaeology.

Laura Jagers, Field Crew and Archival Research
B.S. in Agricultural Science, University of Delaware. Two years experience in Delaware Archaeology.

Tom Bernardo, Graphic Artist
B.F.A. candidate in illustration, University of Delaware.
One year experience as a free-lance artist.

Chris Cheng, Graphic Artist
B.F.A. candidate in Fine Arts, University of Delaware. Two years experience in publication and graphics.

F. Kurt Cylke, Lab Technician
B.A. in Sociology, University of Richmond. M.A. and Ph.D. candidate in Sociology, University of Delaware.

Colleen De Santis, Report Coordinator and Data Entry
B.A. in Anthropology, University of Delaware. Seven years experience in archaeological research in the Middle Atlantic.

Keith Doms, Lab Manager
B.A. in Anthropology, University of Delaware. Eight years experience in archaeological research in the Middle Atlantic.

Steve Eisenbrey, Lab Technician
Student, Paul M. Hodgson Vocational School.

Catherine Johnstone, Lab Technician
B.A. candidate, University of Delaware.

Carol Kretzmann, Lab Technician
B.A. in Anthropology and Sociology, University of Arkansas.

Eileen M. McMahon, Report Preparation and Data Entry
B.A. in Anthropology, University of Delaware. Two years
experience in archaeological research in Delaware.

Lynn Riley, Lab Technician
B.A. candidate in Anthropology, University of Delaware. One
year experience in Delaware archaeology.

Cheryl Trivelli, Photographic Technician
B.A. in Anthropology, University of Delaware. Three years
experience in archaeological research in Delaware.

Paul Weil, Lab Technician
Student, Newark High School.

APPENDIX I
ARTIFACT INVENTORY

SURFACE COLLECTION #1 PREHISTORIC TOTALS

Flakes (cortex)		
quartzite	3(3)	
quartz	90(20)	
chert	32(5)	
jasper	45(15)	
Utilized flakes (cortex)		
jasper	2	
Woodland I point		
quartz	1(contracting stem)	
Early stage biface reject [ESBR]		
quartz	2	
Late stage biface reject [LSBR]		
quartz	1	
Other bifaces		
quartz	9(1)	
jasper	3(1)	
Misc. stone tool		
quartz	1	
Shatter		
quartz	56(5)	
Cores		
quartzite	2(2)	
quartz	32(32)	
chert	8(8)	
jasper	3(3)	
Fire-cracked rock 119		

SURFACE COLLECTION #1 HISTORIC TOTALS

CERAMIC

Redware	61
Creamware	1
Pearlware	1
Whiteware	25
Ironstone	5
Stoneware	3
Tin-glazed	9
Pipe (sewer)	2

GLASS

Window	
(clear)	0
(color)	16
Bottle	
(clear)	12
(color)	60
Milkglass	1
Unidentified	1

ARCHITECTURAL

Brick	169
Nail	
staple	1
unidentified	7
Unidentified	
(Metal)	6
Slate	2
Kaolin pipe stem	
and pipe bowl	3

PERSONAL

Ornament/Toy	3
--------------	---

MISCELLANEOUS

Misc. Metal	5
Bone	1
Shell	69
Plastic	12
Peach pits	2
Macadam	1
Coal	239

SURFACE COLLECTION #2 PREHISTORIC TOTALS

Flakes (cortex)		
quartzite	12(5)	
quartz	53(22)	
chert	39(14)	
jasper	43(19)	
rhyolite	1	
chalcedony	2(1)	
Utilized flakes (cortex)		
quartz	1(1)	
Woodland I points		
quartzite	1	
chert	3(triangle)	
jasper	1	
ESBR		
quartz	2(1)	
LSBR		
quartz	1	
chert	1	
ironstone	1	
Other bifaces		
quartz	1	
chert	2	
Utilized end scraper		
jasper	1	
Shatter		
quartz	43(21)	
chert	2	
Cores		
quartzite	2(2)	
quartz	12(8)	
chert	7(6)	
jasper	9(7)	
Groundstone		
ornament fragment	1	
Fire-cracked rock	91	
Ceramics		
Minguannan	6	
Townsend	1	

SURFACE COLLECTION #2 HISTORIC TOTALS

CERAMIC	
Redware	36
Creamware	1
Pearlware	1
Whiteware	4
Ironstone	9
Stoneware	4
Porcelain	2
Pipe	2
Unidentified	1

GLASS	
Window	
(clear)	1
(color)	46
Bottle	
(clear)	38
(color)	74
Table	2
Milkglass	6

ARCHITECTURAL	
Brick	112
Glazed Brick	2
Nail	
cut	3
Unidentified	8
Unidentified	
(metal)	14

PERSONAL	
Button	1
Ornament/Toy	1
Peach pit	4

MISCELLANEOUS	
Misc. Metal	7
Bone	1
Shell	34
Plastic	10
Rubber	3
Cut Soapstone	1
Coal	384

HISTORIC TOTALS FOR TEST UNITS

	Test Units														
	1	2	3	4	5	6	7	8	9	10	11	13	14	15	
CERAMIC															
Redware	5	1	5	-	-	-	1	1	1	-	1	3	-	-	
Whiteware	-	-	-	-	-	-	-	1	-	-	1	1	-	2	
Ironstone	-	3	-	-	-	-	-	-	-	-	-	-	-	-	
Stoneware	-	-	-	-	-	-	1	-	-	-	-	-	-	-	
Tin-glazed															
delft	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Pipe (kln.)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	
GLASS															
Window															
(clear)	1	-	-	-	-	-	-	-	2	2	3	-	-	-	
(color)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bottle															
(clear)	-	-	3	27	-	-	5	1	-	1	4	-	3	3	
(color)	-	-	1	-	-	4	15	-	-	-	-	-	-	-	
Lamp	-	1	-	-	-	-	-	-	-	1	-	-	-	-	
ARCHITECTURAL															
Brick	8	1	2	4	-	10	8	3	3	9	4	6	3	2	
Nail															
cut	-	-	-	-	3	-	4	-	-	-	-	-	-	-	
wire	-	-	-	-	5	-	-	-	-	-	-	-	-	-	
unident.	2	-	-	123	-	-	3	-	-	-	-	-	4	-	
Unidentified															
(metal)	2	1	1	48	16	-	-	3	-	6	-	-	-	1	
PERSONAL															
Button	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
MISCELLANEOUS															
Misc. Metal	-	-	-	1	4	-	2	-	-	-	-	1	-	-	
Bone	3	-	-	-	2	-	-	-	-	1	-	-	-	1	
Shell	3	2	1	1	41	5	-	-	-	-	-	1	-	-	
Plastic	-	-	-	-	-	-	1	-	-	-	-	-	3	-	
Coal	47	-	18	14	5	19	14	-	2	17	4	16	8	9	

PREHISTORIC TOTALS FOR TEST UNITS

T.U. 1

Flakes (cortex)	
quartzite	4(1)
quartz	10(2)
chert	8(5)
jasper	25(9)

Shatter	
quartz	2

Cores	
quartzite	1

fire-cracked rock	2
-------------------	---

T.U. 2

Flakes (cortex)	
chert	1
jasper	3(1)

fire-cracked rock	1
-------------------	---

T.U. 3

Flakes (cortex)	
quartzite	1
quartz	3(1)
chert	4(1)
jasper	19(5)
rhyolite	1(1)

Cores	
chert	1(1)

fire-cracked rock	1
-------------------	---

T.U. 4

Flakes (cortex)	
quartzite	1(1)
quartz	1
chert	4(1)
jasper	2(2)

LSBR	
jasper	1(1)

fire-cracked rock	2
-------------------	---

Minguannan ceramic	1
--------------------	---

fire-cracked rock 1 T.U. 5

T.U. 6
Flakes (cortex)
 quartzite 6
 quartz 3
 chert 2
 jasper 9(4)

Shatter
 quartz 1

fire-cracked rock 1

T.U. 7
Minguannan ceramic 1

T.U. 8
Flakes (cortex)
 quartzite 1
 quartz 3
 chert 4(1)
 jasper 4(1)

Shatter
 quartz 1

Cores
 jasper 1(1)

Minguannan ceramics 4

T.U. 9
Flakes (cortex)
 quartz 5(1)
 chert 2(1)
 jasper 4

fire-cracked rock 2

Minguannan ceramics 3

T.U. 10

Flakes (cortex)	
quartzite	2
quartz	6
chert	6(2)
jasper	14(6)
Shatter	
quartzite	4(4)
rhyolite	1
fire-cracked rock	7
unidentif. ceramic	
sherd	1

T.U. 11

Flakes (cortex)	
quartz	1(1)
chert	3(1)
jasper	6(4)
fire-cracked rock	4

T.U. 12

Flakes (cortex)	
chert	3
jasper	1(1)

T.U. 13

Flakes (cortex)	
quartz	6(3)
chert	2(1)
jasper	8(4)
Shatter	
quartz	4(4)
fire-cracked rock	9

T.U. 14

fire-cracked rock	1
Minguannan body	
sherd	1

T.U. 15

Flakes (cortex)	
quartz	2
chert	1
jasper	3

APPENDIX II
NOTES ON SITE NUMBERS

NOTES ON SITE NUMBERS
(an example)

7NC-J-165(N-8849)

7NC-J-165

7NC-J-165 = State Site Number

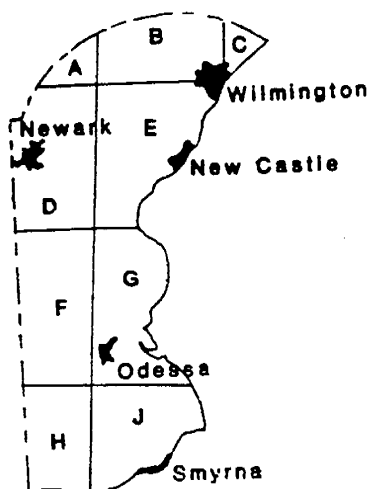
7 = Numerical prefix identifying the state of Delaware.
NC = New Castle County; K = Kent County
J = Each county is divided into lettered divisions, letter J indicates the block in which the site is found in New Castle County, Delaware.
165 = The 165th site recorded in block J, New Castle County Delaware.

N-8849

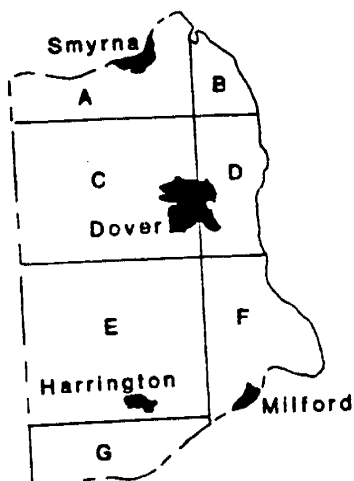
N-8849 = Cultural Resource Survey Number

N = New Castle County, Delaware; K = Kent County
8849 = The 8849th cultural resource inventoried in New Castle County. Each cultural resource number ties into the aerial photos and management files on repository with the Delaware Division of Historical and Cultural Affairs, Dover, Delaware and/or The Island Field Museum and Research Center, South Bowers, Delaware.

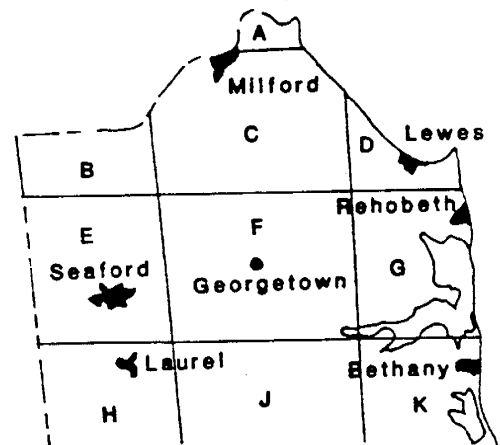
New Castle County-7NC



Kent County-7K



Sussex County-7S



APPENDIX III
GLOSSARY

GLOSSARY

- Alluvium** - Deposits of gravel, sand, and soil that are caused by flowing water.
- Artifact** - Any object shaped or modified by man, or as a result of human activity.
- Archaeology** - The study of the people of the past through the recovery and analysis of the artifacts they left behind.
- Assemblage** - The array of contemporary objects and associations found at an archaeological site.
- Auger** - A large tool for boring holes deep into the ground.
- Basecamp** - A prehistoric dwelling site for hunter-gatherers from which resource procurement forays are made.
- Biface** - A stone tool that has been flaked on both sides.
- Bifurcate** - The dominant projectile point (6500 B.C.) is a small point with a notched base.
- Cache** - A collection of artifacts and/or ecofacts which has been deliberately stored for future use.
- Cobble** - Frequent lithic tool resource for prehistoric peoples.
- Core** - A piece of stone from which other pieces of stone are flaked off to make artifacts.
- Cortex** - Weathered exterior of a piece of lithic material, may be either vein or water-worn cortex.
- Cryptocrystalline** - Indistinctly crystalline; having an indistinguishable crystalline structure.
- Culture** - The nonbiological mechanism of human adaptation.
- Debitage** - Waste material from the manufacture of stone tools.
- Detritus** - Particles of rock or other material worn or broken away from a mass, as by the action of water or glacial ice; any disintegrated material; debris.
- Direct Percussion** - Part of the lithic reduction process, a percussor is directly applied to the worked material with a sharp blow.
- Fast Land** - Solid land.
- Feature** - Any soil disturbance or discoloration that reflects human activity. Also, an artifact that, being too large to remove from a site, normally is recorded only; for example,

house, storage pits, etc.

Flake - A piece of waste material from the manufacture of stone tools, caused by percussion or pressure applied to the object by an external agent (e.g. hammerstone, antler pressure flaker); flake itself may be further utilized as a tool (see "Debitage").

Historic - The time period after the appearance of written records. In the New World, this generally refers to the time period after the beginning of European settlement at approximately 1600 A.D.

Holocene - The latest division of the Quarternary period, which commenced around 12,000 B.P.

Hundred - A subdivision of some English and American counties.

Hydrophytic Association - A group of plants that grow in and are adapted to an aquatic or very wet environment.

Indentured Servant - A contract binding one party into the service of another for a specific term.

Indirect Percussion - In the lithic reduction process, a punch is held against the worked material and the punch is struck a sharp blow with a percussor.

Intestate - A person who dies without making a will.

Lithic - Pertaining to or consisting of stone.

Loam - A loose soil composed of clay and sand, especially a kind containing organic matter and of great fertility.

Macro-band Base Camp - For a hunter-gatherer society, an archaeological site one hectare or larger in area characterized by a wide variety of tool types, abundant ceramics, semi-subterranean house structures, storage pit features, and abundantdebitage from tool manufacture and reduction.

Micro-band Base Camp - A component of macroband, perhaps one or two extended families, which periodically operates independently of the macroband group.

Orphans Court Records - The County Court responsible for the welfare of orphans when a father died without a will. Orphans Court watched over the estate until children (if any) reached majority. A guardian was appointed by the Court, who was to make periodic returns of the estate to the Court. When the youngest heir came of age, then the property could be divided among the heirs. These court records are filled with information regarding income property, education, repairs of houses and outbuildings,

contracts, and other useful material about eighteenth and nineteenth century life.

Pleistocene - A division of the geologic Quarternary Period, which began around 2.3 to 3 million years ago and is associated with rapid hominid evolution from Australopithecinae to Homo sapiens sapiens.

Plowzone - In a plowed field, the upper layer of organic soil which is continually reworked by the plow. In the Middle Atlantic region this is about 8-12 inches.

Prehistoric - The time period before the appearance of written records. In the New World this generally refers to indigenous, pre-Contact societies.

Probate - The official proving of a will as authentic or valid.

Projectile Point - Strictly speaking, a biface attached to the head of an airborne item of weaponry, like an arrow or a thrown dart; frequently used indiscriminately when referring to any biface.

Soil Horizon - Soils are divided into 3 horizons, which reflect different kinds of chemical and physical processes that have resulted from changing climatic conditions.

Stratigraphy - The examination of the soil layering on an archaeological site; the characteristics of each individual stratum and its relationship to others in the sequence is critical to understanding the temporal and spatial characteristics of the site.

Strata - The various layers of human or geological origin which comprise archaeological sites.

Subsurface - Below the surface, not visible from the surface.

Surface Collection - A procedure that includes marking off an area into equal size blocks, then collecting and recording all artifacts noted on the surface.

Uniface - A stone tool that has been flaked only on one side.

